

NETWORK WORLD

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► LOCAL EXCHANGE

Access fees to hike rates

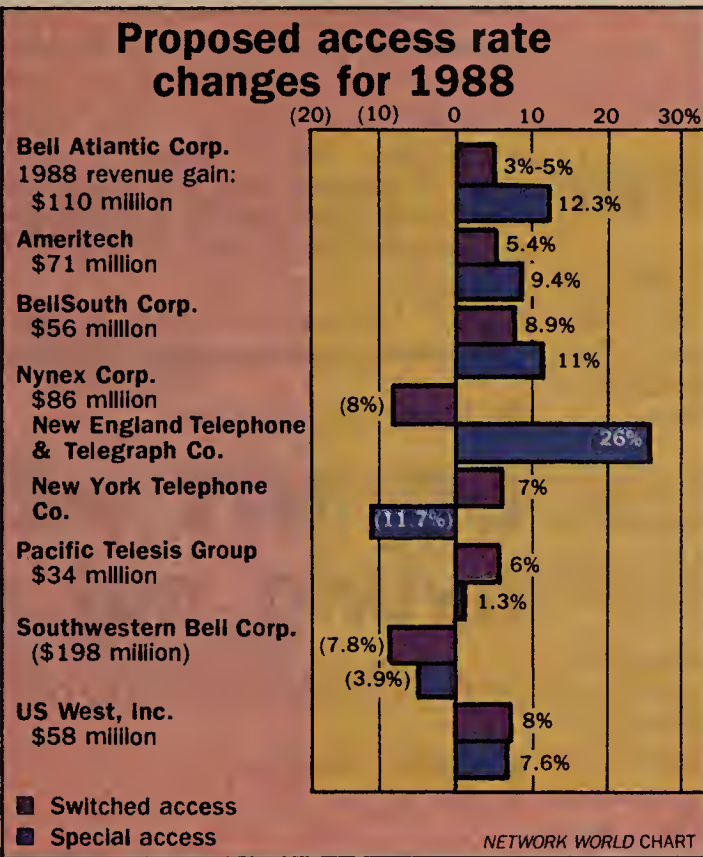
BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — Users could wind up paying between 7% and 10% more for private-line service next year but could see an average 2% cut in the price of switched service if the FCC approves the 1988 access tariffs filed by local exchange carriers.

Local exchange carriers, including the regional Bell holding companies, filed new rates for local access services on Oct. 2, as required by the Federal Communications Commission.

If approved by the commission, the access tariffs will go into effect on Jan. 1.

Access charges are the fees long-haul carriers pay local telephone companies to complete calls through their networks. Because
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► SWITCH STRATEGIES

IBM sets new PBX course

Successors to Rolm switch line: more power in smaller boxes.

BY BOB WALLACE
Senior Editor

NEW YORK — IBM introduced a digital PBX switch family here last week that is 70% more powerful and 70% smaller than current Rolm Corp. switches and represents a departure from some of the proprietary technology used by Rolm.

Rolm users, including officers of the National Rolm Users Group, question IBM's commitment to support CBXs. Page 4.

The new switch line, the IBM 9750 Business Communications System, ranges from 100 to 20,000 lines and supersedes — and is incompatible with — Rolm's mid-range and high-end CBX II switch family.

The switches, introduced as IBM products developed by
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► PRIVATE NETWORKS

Congress ponders tax on equipment

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — The congressional Joint Committee on Taxation and the House Ways and Means Committee are considering a plan to levy a 10% excise tax on private network communications equipment, a levy that could cost users \$1.7 billion over the next three years.
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OPEN SYSTEMS: HOW OPEN ARE THEY?

Tandem: Link to IBM now, expand OSI connectivity later

BY PAULA MUSICH
Senior Editor

Unlike the general-purpose computer vendors highlighted thus far in *Network World's* Open Systems series, Tandem Computers, Inc. serves a market for a tightly focused application: on-line trans-

action processing.

Despite this narrow focus, Tandem is actively pursuing a multivendor connectivity strategy. While that strategy currently focuses primarily on IBM systems and X.25 networking, it will eventually include high-level, standards-based links
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NETWORK LINE

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► Data General will work with Japan's Nippon Telephone and Telegraph to develop and manufacture a "new generation" of integrated communications systems for private networks. Page 2.

► The new version of Banyan's VINES, touted by the company as the most sig-

nificant release since the software's introduction, gets enthusiastic reviews at a users group meeting last week. Page 2.

► Users in Phoenix are at odds with city officials over a dramatic increase in right-of-way permits issued by the city for network lines that cross public property. Page 4.

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► Data PBXs, formerly overshadowed by digital PBXs, are back in the limelight. This week's Product Comparison looks at veteran products from Equinox and Micom. Page 47.

► NETWORK STRATEGIES

Insurer reaches out to agents

Continental gains market edge.

BY MICHAEL FAHEY
Senior Writer

NEW YORK — Continental Insurance Co. is increasing sales of insurance policies and edging out competitors through a \$100 million project designed to provide top independent insurance agents with information systems networked to Continental's data center.

Continental, headquartered here, last year began lending, without charge, IBM System/36s to independent agents. The minicomputers are linked by dial-up lines to two IBM mainframes at the company's data center in Nep-
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NEWSPAPER

► **ENHANCED SERVICES**

Users, vendors blast access fees

Foes line up to lambaste FCC plan at congressional hearing.

BY MARY LINEHAN
Staff Writer

BOSTON — The Federal Communications Commission's proposal to eliminate the access charge exemption for enhanced service providers met with a barrage of criticism at a congressional hear-

ing held here Oct. 2. Speaking at the hearing sponsored by Rep. Edward Markey (D-Mass.), opponents of the proposal said that, if it is implemented, users' communications costs would increase from 100% to as much as 500%. They said the plan could cripple the emerging information

services industry. "If the exemption is eliminated, the young information industry, a bright spot on the economic horizon, will be impaired, and new services and approaches to the management of information will never materialize," said John Stuckey, academic computing director at Boston's Northeastern University.

The FCC plan would impose access charges on providers of enhanced services such as on-line data bases, time sharing, remote computing, electronic mail, voice messaging, home banking and home shopping. The FCC originally exempted enhanced service providers from access charges to foster the industry's growth.

FCC Chairman Dennis Patrick

argued in favor of the agency's proposal, saying that enhanced service providers should have to shoulder their share of access charges, which are already levied against long-distance carriers.

"We must assure that the regulatory environment does not distort the development and growth of this market by continuing the exemption," Patrick said.

Markey, chairman of the House Subcommittee on Telecommunications and Finance, voiced strong disapproval of the proposal in his opening remarks, calling the information services industry an "essential component of our economy" that is "still in a critical nascent stage."

"I fear that this FCC proposal flies in the face of making information services accessible to everyone and begins to bring us closer to a two-tiered society of information rich and information poor," Markey said. "This information polar-

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► **LOCAL NETWORKS**

Users greet Banyan's VINES 3.0 with approval

BY PAULA MUSICH
Senior Editor

WESTBORO, Mass. — Personal computer network server company Banyan Systems, Inc. last week announced Release 3.0 of its Virtual Network System (VINES) software, which it touted as the most significant release since the software's introduction.

Release 3.0 of VINES, shown for the first time to customers at a users group meeting in Newport, R.I.,

last week, includes over 100 enhancements and several new options, including support for the Department of Defense's Transmission Control Protocol/Internet Protocol.

Users at the meeting and analysts briefed on the release greeted it with enthusiasm, especially for its improved security and system administration features. "There are no other vendors hooking personal computers together that provide this degree of centralized security and network management," said Mike Millikin, senior analyst for Patricia Seybold's Office Computing Group.

Security enhancements to VINES were made to meet the needs of existing customers, which include many banking and financial services companies, according to Doug Gold, senior analyst for International Data Corp., a Framingham, Mass., market research firm.

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Network World wants to make its news coverage even better, and for that we ask your help. If you know of an interesting event that just occurred or is about to occur, please call. We'd also like to know how you optimize your networks. Call Editor Bruce Hoard toll free at (800) 343-6474.

► **JOINT VENTURES**

DG, NTT will develop hybrid net exchanges

Intelligent network gear in the works.

BY MARY LINEHAN
Staff Writer

WESTBORO, Mass. — Data General Corp. last week said it will work with Japan's Nippon Telegraph and Telephone Corp. (NTT) to develop so-called intelligent network systems that will combine computer and integrated voice/data communications capabilities.

DG, through its Nippon Data General subsidiary, will work with NTT to develop what a spokesman described as "hybrid exchange systems that integrate data, voice and computer capabilities for intelligent private corporate networks." The systems, he said, will be based on DG's MV class superminicomputers.

The spokesman would not divulge further details of the planned products but said they will utilize circuit/packet-switching technology and will "accommodate important international communications standards, including Integrated Services Digital Network, Open Systems Interconnect and [IBM's] Systems Network Architecture."

NTT will provide funding for research and development work to be conducted at DG facilities here, in Rockville, Md., and in Dallas. Once developed, the systems will

be manufactured at DG facilities in the U.S. and the Far East. Neither company would divulge how much money will be invested in the development project.

NTT will market the systems to its Japanese customers, while DG will market its versions of the products in the U.S. and other countries. The first Japanese systems are slated for introduction in the spring of 1989.

Colin Crook, senior vice-president of DG's Communications Systems Group, said the computer/communications systems will allow users to create intelligent networks "that cost-effectively combine high-speed data and voice."

"This is the beginning of a strategic partnership with NTT," Crook said. "We are embarking on the first step in the development of true integrated information networks."

Suzanne Peterson, an analyst with First Boston Corp., a financial services company in New York, said, "It's a smart deal for Data General. It plays to their strengths in technology, in people and in marketing. It is also terrific in terms of the prestige of working with NTT," she continued. "This should settle any worries customers had about Data General folding up." □

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Corrections: In the article "The T-1 Dynasty" (NW, Sept. 21), former Tymshare, Inc. President Tom O'Rourke was erroneously identified as Ed O'Rourke. Also, former Tymnet, Inc. Western Region Manager Audrey MacLean was incorrectly referred to

as northwest district manager. The column "Sifting facts from fables," (NW, Sept. 28) shows a byline by John Carosella at Network Strategies, Inc. The byline should be Joe Healey, a principal with Network Strategies. We regret these errors.

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► PRIVATE NETWORKS

Users decry Phoenix right-of-way fees

BY MARY PETROSKY
West Coast Correspondent

PHOENIX — Communications managers here are at odds with city officials over a dramatic increase in the cost of right-of-way permits issued by the city.

In order to run network lines over or under public property, users have always had to obtain right-of-way permits from the city. But managers say their companies are now being asked to pay thousands of dollars — even hundreds of thousands — for permits that used to cost them just \$50 annually.

But, according to Mario Saldamando, deputy city engineer, Phoenix is only following the lead of dozens of other U.S. municipalities, including Boston, Houston and Atlanta, in revamping its right-of-way fees. He said the permits were originally intended to allow only temporary use of public rights-of-way.

“The fact is, there is really nothing in the current ordinances to al-

low people to use public rights-of-way for telecommunications,” Saldamando said.

As a result, the city of Phoenix is trying to tailor the revocable permits to address new networking applications, he said. Some cities set their right-of-way fees as a percentage of a company’s annual revenue, while other cities charge a set price according to the distance involved, Saldamando noted.

“We are hopeful we can standardize this in a simple ordinance,” Saldamando said. In the meantime, individual users must negotiate with the city to set fees for the permits.

The city of Phoenix’s move is indicative of a growing trend on the part of governments looking to tax communications users in order to raise needed revenue (see “Congress ponders levy on equipment,” NW, page 1).

The fact that the city has not issued any formal notice of the fee hikes or fixed any fee schedules has led to confusion, said Judy Holcomb, Arizona chapter director

for the corporate government liaison committee of the Tele-Communications Association (TCA). Many companies first learned about the new fees when their permits came up for renewal, Holcomb said.

The city has proposed to charge a number of companies \$26.40 annually for copper pairs that run for distances up to 1,000 ft, Holcomb said. The suggested fee for coaxial cable is \$1,056 and for fiber-optic cable, \$10,560. The fees are higher for longer cable runs.

Greyhound Corp. became aware of the new fees last fall when its permit expired, said Gerome Budz, manager of headquarters communications systems for the bus company. Greyhound runs more than 300 copper pairs in a private network that connects five buildings in a square block area and faced a bill of more than \$8,000 for crossing city streets, Budz said.

Budz noted that his management was able to negotiate with the city for “a fair price” on its right-of-way permit. He did not want to reveal what that price was.

Another telecommunications manager and TCA member, Duke Bonney, said his company is in the process of negotiating with the city. Bonney’s company, which he asked not to be named, could potentially pay several hundred

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► CBX UNCERTAINTY

Rolm users question IBM support

BY BOB WALLACE
Senior Editor

Although IBM promised continued support of Rolm Corp.’s existing high-end PBXs when it introduced the IBM 9750 Business Communications System switch family last week, current Rolm users are concerned about how long Big Blue’s backing will last.

National Rolm Users Group (NRUG) officers told *Network World* they planned to press Rolm President Ray AbuZayyad on IBM’s CBX 8000 and CBX 9000 support plans at a special one-day meeting that was scheduled to be held in Santa Clara, Calif., last Friday.

IBM’s statement that it will no longer actively market the CBX 8000 and the CBX 9000 elicited the wrath of many Rolm private branch exchange users, who have invested millions of dollars in this equipment.

IBM said it will continue to support the installed base of CBX 8000s and 9000s, which one senior NRUG officer estimated at some 20,000 systems. When asked how long IBM would support the switches, Jack Blumenstein, assistant group executive for IBM’s Information Systems Group, replied, “indefinitely.”

Blumenstein said IBM would also continue to enhance the switches and would provide Integrated Services Digital Network interfaces if there is enough user demand. He added that if a user

absolutely needed a CBX 8000 or CBX 9000, IBM would provide it.

Chuck Garrison, vice-president of telecommunications trading operations for the Chicago Board Options Exchange and president of NRUG, said he received more than a dozen calls the day after IBM’s product announcement from Rolm users who were concerned about IBM’s commitment to current CBX users. Garrison has eight CBX 9000s.

“The No. 1 question has been, ‘How long is IBM going to support the CBXs?’” Garrison said. “IBM has said indefinitely. But most users don’t believe that. It just isn’t practical. I certainly want some type of guarantee I can carry to my company’s board of directors that says the CBXs will be fully supported until they are off the books. IBM has to give Rolm users some number they can take back to their companies’ top management.”

Users who recently installed Rolm CBXs have the most at stake. One user, who upgraded a CBX 9000 to the CBX 9000AE in July, wondered what the future holds. “I am just not certain how IBM’s announcements and [CBX] support plans will affect us,” said Steve Lunsford, voice network manager for First Tennessee Bank N.A. in Memphis.

Asked what Rolm users would seek in terms of a CBX support commitment from IBM, Lunsford said, “Ten years is what most users would ask for.”

Lunsford added that he is con-

cerned that the introduction of the new IBM PBX may make Rolm equipment obsolete. “Vendors have antiquated some equipment when they introduced new equipment,” Lunsford said. “Just because IBM has announced a new technology and it’s the wave of the future, that doesn’t mean we no longer have equipment on the books to depreciate. It also doesn’t mean we are going to rush out and buy one of these new PBXs.”

Frank Schoff, director of telecommunications for the Chicago Tribune Co., said he almost found himself in the same situation as Lunsford. “I have two [Rolm] PBX orders that have been on hold since mid-summer,” he said. “I put them on hold because the rumors I was hearing about the new IBM PBX were starting to have more and more substance.”

“The wringing of hands concerning the 8000s and 9000s right now is premature, but the expressions of concern are not,” Schoff said. “I hope that any upgrades will continue to be available to 8000 and 9000 users.”

“We will press to get as strong a statement out of Rolm as is possible,” Schoff said. “What would be ideal would be for them to present that statement to the full NRUG [at the conference] later in October. That would be very effective.”

Pat Springer, telecommunications director for Holly Farms Poultry Industries, Inc. in Wilkesboro, N.C., and a senior NRUG offi-

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► SPLIT DECISION

CCITT adopts dual protocol

Combines MNP, LAP in error-protection ruling.

BY JIM BROWN
New Products Editor

GENEVA, Switzerland — Deadlocked over competing error-checking techniques, a study group of the Consultative Committee on International Telephony and Telegraphy has decided to recommend a standard that incorporates both Microcom, Inc.'s Microcom Networking Protocol (MNP) and CCITT's Link Access Procedure (LAP).

The decision came after a two-week-long meeting here of the CCITT Study Group XVI, which is trying to settle on a recommendation for an error-checking scheme for dial-up modems

that transmit asynchronous data synchronously.

The group had planned to base the recommendation on either the MNP or LAP protocol.

But after failing to reach a required unanimous opinion on either of the two protocols, the eight CCITT members voting on the matter decided to work toward a recommendation that combines MNP and LAP.

In order to have the recommendation published at the end of its study period in late 1988, the group was hoping to recommend a standard by year end. But Belgium, Germany, France, the Netherlands, Italy, Sweden and IBM Europe put their weight behind

MNP, while the UK and Japan pushed for adoption of a modified LAP. Because MNP was developed by a U.S. company, the U.S. delegation chose not to stand behind either standard.

As a compromise, the group agreed to incorporate MNP, as it exists today, into the recommendation. It also decided to freeze development of MNP and stipulated that an unspecified form of the LAP protocol and MNP Classes 1 through 4, which cover error checking, be outlined in the recommendation.

There are currently two LAP-based protocols in use — LAP B, a CCITT recommendation for Layer 2 of the X.25 protocol, and LAP

D, a CCITT recommendation for the D signaling channel of Integrated Services Digital Network.

If the group accelerates the approval process, it could adopt a final recommendation by mid-1989, according to Greg Pearson, vice-president of technology planning at Microcom.

Even though both MNP and LAP will be included in the recommendation, the group can still decide to give one protocol more prominence than the other.

"This is the spirit of a compromise. Those who support the LAP protocol agreed to give a degree of status to MNP, while MNP backers effectively gave the future of error checking to LAP," said Dale Walsh, vice-president of engineering for U.S. Robotics, Inc., a modem maker that employs MNP in its products. "What MNP gets out of this is status as a

recommended CCITT protocol," said Walsh, who has served on the CCITT modem committees since 1978.

In the short term, the action is a shot in the arm for MNP, for which Microcom has lobbied heavily. However, MNP could lose out in the long run.

By failing to include a current LAP method — LAP B or LAP D — in its recommendation, the CCITT Study Group will be able to develop a LAP method that incorporates enhanced error-checking techniques that improve on MNP.

"It's not clear what the LAP side of the recommendation will look like," Pearson said. "But, it will take so long to specify the LAP protocol, MNP will continue to proliferate as a de facto standard," he added. That will ensure the 300,000 modems using MNP will remain useful. □

► ASSOCIATION OF INFORMATION MANAGERS

AIM banks on communications

Savings & loan group seeks competitive technology edge.

BY JIM BROWN
New Products Editor

BOSTON — Members of the Association of Information Managers (AIM), gathered here last week for the group's annual Financial Automation Conference and Technical Seminar (FACTS), said communications is playing an increasing role in their efforts to gain an edge on competing financial institutions.

AIM members, data processing and communications managers at savings and loan associations, said they will expand the use of existing on-line teller nets to compete better against commercial banks.

Platform automation

Several members are involved in so-called platform automation projects, which involve giving customer service representatives with personal computers access to mainframes. Armed with additional information about customers, the representatives will be able to generate new business. Others said they will give real estate agents with personal computers dial-up access to their hosts, allowing for the direct input of mortgage loan applications.

Both of these network-

ing schemes show savings and loan associations' increasing reliance on communications to compete against commercial banks, which started going after the associations' consumer base after deregulation of the banking industry in the early 1980s. The associations usually offer mortgage loans, savings accounts, certificates of deposit, passbook savings accounts, automobile loans and personal loans. Commercial banks traditionally served businesses.

"The key to survival is to make better use of existing communications capabilities," said Thomas Brady, senior vice-president of First Atlantic Savings of South Plainfield, N.J.

During the late 1960s, the associations took up automation, installing terminals that let a teller access the host computer and update a customer's account at the time of deposit.

That on-line philosophy had given the associations an edge in the consumer market, AIM members said. "Our whole survival has been predicated on real-time, on-line transaction processing," said Doug Sappenfield, AIM president and division vice-president of operations for Decatur

Federal Savings and Loan Association of Decatur, Ga. Building on that philosophy, Sappenfield said Decatur Federal will implement platform automation in December.

With platform automation, personal computers are linked to a financial institution's data center through the organization's existing teller network. Customer service representatives can then access account information and assist customers in opening new accounts and applying for loans.

The representatives will also be able to steer customers to other savings and loan programs offered by the institution.

New York-based Chemical Bank is currently involved in a platform automation project. The bank is linking personal computers in branch offices throughout the New York metropolitan area to a central host. In addition to giving customers better service, the idea behind platform automation is to build a base of customers who have more than one account with the association.

Sappenfield cited studies that show a customer with one account is more likely to switch banks than a customer with two or more.

Brady said he spent three years developing a platform automation plan to link personal computer local-area networks at branch offices to on-site controllers used to link teller terminals to the host. "We're looking to utilize the PC to assist our staff as well as the customer in

making better informed decisions on the customer's financial needs," he said.

Don Daniels, vice-president of information systems at Atlanta-based Fulton Federal Savings and Loan Association, is also considering a platform automation project that would link 42 branch offices to the host. "Customers are much more aware of the interest rates and banking options open to them today. We have to provide a way for them to take advantage of that knowledge," he said.

Other AIM members are mulling plans to link personal computers at real estate offices to their data centers via dial-up facilities. The link will enable real estate agents to enter mortgage loan applications directly on the association's host. AIM members hope that link will encourage real estate agents to steer home buyers to them, just as the installation of Sabre reservations network terminals in travel agent offices boosted the number of tickets American Airlines, Inc. sold.

"Real estate agents will recommend home buyers go to the bank that can process the loan fastest because they want to sell the home and get their commission," Daniels said. The system must also be able to supply up-to-date interest rate quotations to the agents, he added.

Barry Marks, vice-president of DP at Home Savings Association in Midland, Texas, is also devising a plan to link real estate agents, as well as its mort-

gage origination offices in Dallas, Atlanta and San Antonio, Texas, to its data center. "You have to provide a high level of service to the consumer. Otherwise, the real estate agent won't recommend your bank to a customer who is looking for financing," he said.

AIM was formed in the late 1960s as an outgrowth of the Financial Managers Association, a group of association financial managers associated with the U.S. League of Savings Institutions. The group has grown from 70 members to more than 750. □



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► **INDUSTRY INSIGHTS**

Micom reorganization leads to new layoffs

BY PAM POWERS

Senior Editor

SIMI VALLEY, Calif. — Micom Systems, Inc. laid off 4% of its work force late last month as part of a reorganization aimed at shifting the company's focus from sales of low-end communications gear to providing integrated networking products.

The reorganization resulted in the second set of layoffs this year. Eighty-two of the company's more than 2,000 employees were dismissed from Micom's headquarters here, where the company manufactures data private branch exchanges, modems, statistical multiplexers and X.25 equipment such as packet assembler/disassemblers and packet switches.

Spokeswoman JoAnne Martz said the layoffs did not affect workers in Micom's X.25 or local network product groups or the company's sales operations.

The restructuring spawned a new Integrated Networking Group (ING), which will bring together Micom's formerly separate statistical multiplexer, X.25 packet-switching and data PBX operations.

ING will also be responsible for developing a network management system that will control all of Micom's networking products.

Martz said the net management system will also control Spectrum Digital, Inc.'s mid-range T-1 multiplexer. Micom announced its intent to acquire Spectrum Digital in June. Martz would not divulge when the network control product will be announced.

ING, which comprises manufacturing and sales operations and the company's UK division, will be headed by Executive Vice-President Roger D. Shober, former Micom corporate vice-president of sales and marketing. The company's Micom-Interlan, Inc. local net-

work subsidiary and Black Box Corp. catalog company will continue to operate independently of the newly created group.

"This move reflects our business strategy to concentrate on high-growth areas such as local networking and packet switching. We are not, however, abandoning our traditional stat mux and data private branch exchange customers," Martz said.

The layoff, which slimmed ranks in those "traditional" product line operations, follows an earlier staff reduction within the data PBX manufacturing operations here about six months ago, Martz said.

Because of that staff reduction, the company is in the process of moving from a 120,000-sq-ft manufacturing facility to an 85,000-sq-ft facility.

"Micom is in a period of tremendous transition," said Andy Schopick, a vice-president with Gartner Securities Corp., a securities firm located in Stamford, Conn. "It's recent quarterly performance has been flat. The company is trying to become more networking-oriented."

While Micom-Interlan posted 22% growth in local network sales

for its most recent quarter, ended June 30, the company's quarterly revenue for local nets, data PBXs, packet gear and statistical multiplexers remained below plan, the company said. Analysts say slow sales in the data PBX and statistical multiplexer product lines, where demand is sluggish and competition heavy, have caused a drag on Micom's earnings performance in recent quarters.

For the quarter ended June 30, Micom posted earnings of \$2.9 million on revenue of \$49 million, as compared with last year's earnings of \$1.5 million on revenue of \$46 million.

"Micom's traditional strength is in the low-end, low-price, low-technology markets," Schopick noted. "The company is just shifting to address changing user needs."

Martz said the company's Black Box subsidiary, which sells communications accessory products through mail order, contributes a third of Micom's annual revenue. She said Black Box and Micom-Interlan both continue to grow at a healthy rate. During this fiscal year, she said, Micom will introduce new products aimed at the packet-switching, local networking and digital wide-band markets. ▮

► **HEWLETT-PACKARD**

HP adds to net tools

BY MARY PETROSKY

West Coast Correspondent

CUPERTINO, Calif. — Hewlett-Packard Co. is scheduled to announce today a series of communications products aimed at making it easier to interconnect its systems with those from other vendors.

Products included in the release include links for tying IBM Personal Computers to HP's line of minicomputers, as well as support for the IBM Network Basic I/O System, which HP said it intended to support earlier this year. Other products set to bow are designed to tie the company's engineering workstations to IBM and Digital Equipment Corp. computers.

HP enhanced its OfficeShare PC networking software to support IBM's NETBIOS, allowing IBM Personal Computers and compatibles on an HP local network to use NETBIOS-compatible applications.

The company also extended its interprocess communications capabilities down to the personal computer level with the introduction of Network Interprocess Communications/Remote Process Management. This enables one application to call another application, such as with IBM's LU 6.2 protocol, according to Karyn Mashima, group program manager for HP's Information Networks Group.

Although HP supported this type of communications between its minicomputers, it had not provided it for personal computers, Mashima said. The new software will allow users to develop distributed applications for IBM Personal Computers and compatibles and

the HP 3000. Users could develop a personal computer application, for example, that would send data to an HP 3000 for processing.

HP also added a file-transfer capability to OfficeShare, allowing personal computers on a network to transfer files to HP 3000, HP 1000, HP 9000 systems or DEC VAX computers. The new software will be available in the first half of 1988 for less than \$800.

HP said it has completed testing of several third-party vendors' products that can be used to establish high-speed links between HP 9000 engineering systems, HP 1000 real-time systems and other vendors' computers. Network Systems Corp.'s 50M bit/sec Hyperchannel connection and Netex software have qualified for use with the HP 3000, 9000 and 1000.

With Hyperchannel and Netex, users of HP's minicomputers can share large files at high speeds. The Cray Station from Cray Research, Inc. also has been qualified for use with the HP 9000 Series 300 workstation running HP-UX, HP's version of Unix. The Cray Station allows HP 9000 users connected via Hyperchannel to send data to a Cray supercomputer and receive processed information back on the HP-UX workstation.

HP also introduced HP-UX SNA 3770, software that enables 9000 Series 300 and 800 workstation users to transfer files to and from IBM mainframes. Users can also access centralized IBM data bases, run programs in the mainframe and receive results on the HP 9000.

Pricing for the HP-UX SNA 3770 ranges from \$2,000 to \$13,000, de-

pending on the HP system used. It will be available in the first half of 1988. Both the Cray Station and the HP-UX SNA 3770 software can function as stand-alone connections or as gateways.

A new release of HP Network Services, Release 2.0, for the DEC VAX supports the Department of Defense's Telnet virtual terminal service. With Release 2.0, HP 9000 users can log on to any computer on a DECnet network, and DEC users can access HP 9000 systems across IEEE 802.3 Ethernet nets.

Pricing for Release 2.0 varies according to the DEC computer supported and begins at \$4,285 for the MicroVAX. It will be available in the first quarter of 1988.

As part of its SiteWire offerings, HP has introduced the HP 10 Mbps-10Mbps LAN Bridge, which interconnects IEEE 802.3 Ethernet networks. The bridge filters communications traffic and can extend networks up to 10 miles. The bridge costs \$8,000 and is available immediately.

In addition, HP will now be reference selling, or recommending to interested buyers, Siecor Corp. Electro-Optic Products Division's Fiber Optic multistation access unit (MAU). The Fiber Optic MAU operates in conjunction with HP's repeater to provide interconnection of 802.3 Ethernets.

In addition, HP announced its intent to support IBM's PU 2.1 for the HP 3000 and to provide connections to the IBM Token-Ring Network via a bridge product.

IBM said it will support PU 2.1 on the 9370 by the end of 1988, and HP is taking its timing cues from IBM, Mashima noted. "PU 2.1 is going to be one of IBM's strategic capabilities that everyone in communications is going to have to emulate," she said. ▮

Users question IBM support

continued from page 4

cer, said he didn't foresee major problems with IBM support of his company's dozen-plus Rolm PBXs. "What you will find is that they will continue to support the installed base in the hardware and software areas," Springer said, "but you will find that true enhancements or new products will be directed toward IBM's new PBX."

Jeff Close, a senior consultant with the DMW Group, Inc., a Stamford, Conn.-based communications research and consulting group, agreed that IBM's development efforts will likely now be focused on the 9750, rather than on existing Rolm switches. "Users' concerns are valid. Although this introduction is a good move in the long run for IBM and Rolm, users will likely be disappointed," he predicted.

Preserving PBX market share

Industry trackers said IBM had to announce the 9750 to avoid further reduction of Rolm's PBX market share, which one analyst said began dipping after IBM acquired Rolm in September 1984.

Greg Carlsted, a senior analyst with Dataquest, Inc., a San Jose, Calif.-based communications research and consulting firm, said, "Rolm's market share dropped from 15.3% of total lines shipped in 1985 to 14.9% last year. I predict Rolm's market share for 1987 will at best approximate 1985 levels."

Carlsted said reclaiming lost market share represents an expensive proposition for IBM. "Each tenth of a percentage point will cost millions of dollars to win in today's market." ▮

INDUSTRY UPDATE

Edelman makes Telex Corp. offer

Investor Asher Edelman, chairman of Datapoint Corp., last week offered to purchase all outstanding shares of telecommunications equipment maker Telex Corp. for \$65 a share, or a total of roughly \$870 million. The tender offer was actually made through TLX Acquisition Corp., a subsidiary of TLX Partners, a partnership formed by subsidiaries of Datapoint and Intellogic Trace, Inc. Through TLX, Edelman already owns more than 8% of Datapoint.

► EUROPEAN VENTURES

Northern joins forces with STC

Deal to aid firm's entry into UK market.

BY PAM POWERS
Senior Editor

TORONTO — Northern Telecom Ltd. last week paid ITT Corp. \$730 million for its 24% stake in the British computer and communications firm STC plc, an interest Northern Telecom said will facilitate its attempt to penetrate the European market.

Northern Telecom separately purchased an additional 3.8% of STC on the open market, raising its total share of the \$3 billion firm to 27.8%. At the same time, STC purchased a 40% interest, at a price yet to be determined, in Northern Telecom's UK subsidiary, Northern

Telecom plc. The transactions are subject to approval by the British government.

London-based STC sells transmission equipment such as fiber-optic cable and multiplexers to European telephone companies and utilities, an STC spokesman said. The company also markets private branch exchanges to end users, a business that contributes no more than 5% of annual revenue. "We're not really in the switching market," the spokesman explained. "Our energies are concentrated on transmission equipment."

Additionally, STC is the owner of International Computers Ltd., the sole manufacturer of main-

frames in England, and is reportedly a worldwide leader in sales of submarine cable. Mainframe sales contribute about 50% of STC's annual profits, the spokesman said.

"STC will help us build a presence in the UK market, where it has been a very significant player for a number of years," Northern Telecom spokesman Graham Davies said. In 1986, STC posted earnings of more than one million British pounds on sales of nearly two billion pounds. The company's six-month results, not available by press time, were also "very solid," Davies maintained.

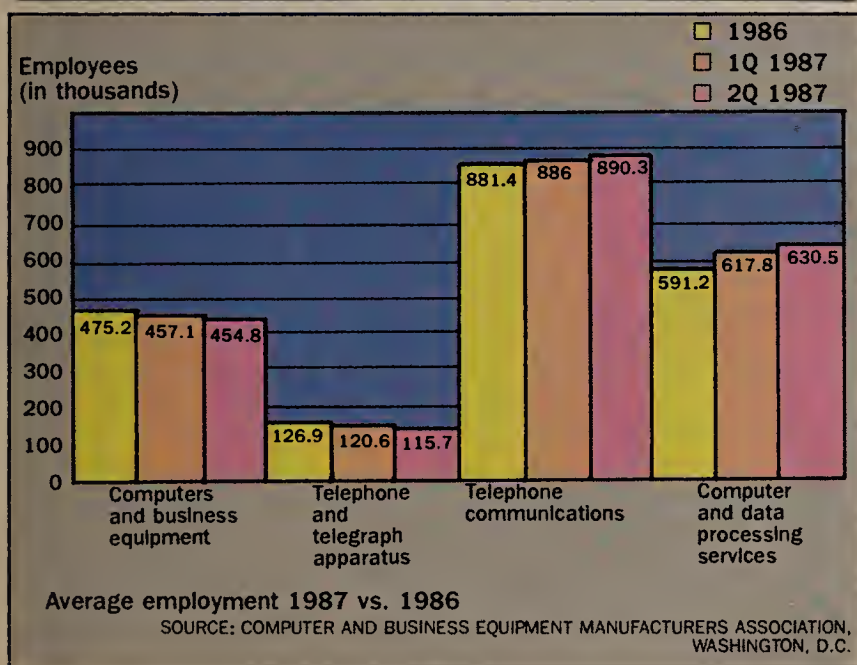
Elizabeth Angus, executive vice-president of Angus TeleManagement Group, Inc., a Toronto-based consulting firm, affirmed that the move is an important one in Northern Telecom's development. "Europe is the next phase of Northern Telecom's expansion in the world market," she said. "Northern Telecom's international sales are large, but they are mostly in the Pacific rim. The company has always had difficulty getting into Europe, but

this will help."

STC and Northern Telecom will continue to operate separately but may jointly pursue bids, Davies said. In a prepared statement, Northern Telecom Chairman and Chief Executive Officer Edmund Fitzgerald hinted that the 40% sale of his firm's British operation might allow the two companies to "achieve synergistic gains" through joint research and development. He noted that "much of the basic technology development underlining STC's telecommunications activities is common" to both companies.

ITT's sale of its remaining interest in STC comes as no surprise. The New York-based conglomerate has been shedding pieces of STC since 1979, before which time it owned STC entirely. An ITT spokesman said the decision to sell its interest in the firm was based on ITT's recent moves to slim down its operations. ITT has sold hundreds of divisions, many in the communications business, in recent years. ▢

High-tech employment



► NETWORK COMPUTING FORUM

NCF membership increases by 27

BY PAULA MUSICH
Senior Editor

CHELMSFORD, Mass. — The Network Computing Forum (NCF) recently gained momentum in its drive to develop and promote standards for sharing computer network resources with the addition of 27 new members.

The new members increase NCF's total membership to 77 organizations, including a number of end-user organizations and large computer vendors.

NCF, which was founded this year by Apollo Computer, Inc., is a forum working to develop standards for shar-

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► VIRTUAL TELECOMMUNICATIONS NETWORK SERVICE

AT&T rivals decry VTNS

BY KARYL SCOTT
Washington, D.C. Correspondent

WASHINGTON, D.C. — MCI Communications Corp., US Sprint Communications Co. and the Independent Data Communications Manufacturers Association last week urged the Federal Communications Commission to reject AT&T's Virtual Telecommunications Network Service (VTNS) as anticompetitive and discriminatory.

AT&T's competitors filed comments on the VTNS tariff last week in hopes of prodding the FCC to launch an investigation into AT&T's practice of filing customized, designer tariffs for individual customers.

They want the FCC to initiate the investigation before VTNS is scheduled to take effect Nov. 6.

Under the VTNS tariff, filed Sept. 23, AT&T will design, install and manage customer networks that draw on the full range of AT&T transmission services. The service is available under three- and five-year contracts. AT&T has already signed E.I. DuPont de Nemours & Co., Inc. as the first VTNS customer.

Opposing argument

The opponents of the service argue that the tariff represents a service designed exclusively for a single customer and, as such, is illegal under the rules of the FCC.

AT&T encountered similar opposition

with its General Electric Telecommunications Network tariff filed in April. That controversy forced AT&T to refile the tariff to make it generally available to the public.

While AT&T says VTNS is a publicly available service, such an offering is unlikely to be applicable to other potential customers considering the particular configuration of the network and the unique communications requirements of DuPont, according to statements filed by MCI and Sprint.

"The proposed tariff discloses AT&T's strategy, that, if permitted, will result in the effective removal of restrictions on AT&T's ability to commit to any prices and service terms and conditions necessary to close large user transactions," MCI stated in its filed comments.

Such an anticompetitive strategy may prompt MCI to withdraw its earlier support for the deregulation of AT&T, MCI said.

The Independent Data Communications Manufacturers Association argued that AT&T's VTNS tariff lacks the pricing and support material necessary to allow competitors and potential customers to determine if the service is priced fairly.

"There is no way to determine the extent to which the capabilities offered are new or standard elements of other tariffs that have simply been renamed, repriced and bundled," the association's comments read. ▢





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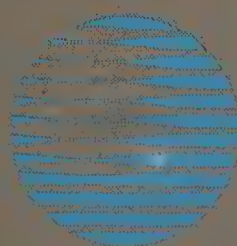
A single System 85, with remote modules, can serve up to thirty locations in a nineteen square-mile ring. While multiple systems can be linked to better serve far-flung operations.

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► BRITISH TELECOM

BT invests \$60m in Mitel PBXs

BY BOB WALLACE
Senior Editor

KANATA, Ontario — British Telecommunications plc recently pledged up to \$60 million over the next three years to support an extensive research and development effort for Mitel Corp.'s SX-2000 high-end digital private branch exchanges.

In return for its investment, British Telecom, Mitel's parent company, will receive a royalty based on SX-2000 sales resulting from these new developments. The R&D program will be carried out at Mitel's corporate headquarters here. Mitel would not comment on specifics of the R&D expenditures. British Telecom's infusion of capital for SX-2000 is part of a program to revamp the switch maker's entire PBX line. Mitel instituted price cuts, effective immediately, for its low-end and mid-range analog and digital PBXs at the recent Tele-Communications Association conference in San Diego. The SX-2000 family of digital PBXs includes the SX-2000S and the SX-2000SG. □

► MARKET MANEUVERS

GE drops stake in INI

Factory net-maker becomes U-B unit.

BY PAM POWERS
Senior Editor

SANTA CLARA, Calif. — General Electric Co. has exchanged its 36% ownership in Industrial Networking, Inc. (INI) for a 3.6% piece of INI cofounder Ungermann-Bass, Inc., a move that makes INI a wholly owned subsidiary of Ungermann-Bass. Citing slower-than-expected growth in the market for Manufacturing Automation Protocol prod-

ucts, which INI addresses with its factory networking products, Ungermann-Bass spokeswoman Angela Mongillo said INI is "just barely making a profit." She said the consolidation of INI into Ungermann-Bass will allow the two companies to jointly pursue office and factory networking bids "more efficiently and productively."

In addition to gaining an initial 3.6% interest in Ungermann-Bass, GE has the option to increase its share in the local net vendor by another 3.6% over the next four years.

INI was formed in 1984 as a joint venture between GE, which contributed cash to the operation, and Ungermann-Bass, which held a controlling interest and developed the MAP networking products introduced by INI in late 1985. Although INI gained a "leading market share" and was chosen by General Motors Corp. for a large MAP networking project, Mongillo said demand for INI's products is still weak.

According to Eric Killorin, publisher of "Netline," an industry newsletter, "INI hasn't done as well as expected because the industrial networking market hasn't developed as vendors thought it would. There's a lot of sluggishness on the part of users to adopt MAP products."

Since July, Mongillo said, Ungermann-Bass has worked to consolidate INI's sales and marketing forces into those of the local network vendor.

That has involved the relocation of staff, she said, resulting in some voluntary departures. However, she said, no layoff plan has been put into effect.

The goal behind consolidating INI with Ungermann-Bass is to provide users with "enterprisewide networking" from a single vendor, Mongillo said.

"We realized that a number of our customers wanted office and factory networking from a single vendor," she commented.

The two companies will continue to manufacture and market their existing product lines but will place new emphasis on the interrelationship between office and factory networks, Mongillo said. "You'll be seeing things like bridges between token ring and token bus," she said.

Commenting on GE's interest in Ungermann-Bass, Killorin said, "Ungermann-Bass has a very profitable business in the terminal switching environment with its Ethernet and broadband products, and GE wants to share in those profits."

"Making INI a wholly owned subsidiary allows GE and Ungermann-Bass to participate in industrial networking without affecting their profits very much," Killorin added. □

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TELECOM TRENDS

“The most dangerous thing since the L.A. freeway in the heat of summer is presenting management with a capital expenditure request for telecommunications [equipment].”

Matt Kenny

President and chief operating officer
Racal-Milgo, Inc.
Sunrise, Fla.

HOME SHOPPING NETWORK

HSN installs Rockwell gear

Attempts to clear call bottleneck that caused \$1.5b lawsuit.

BY JIM BROWN

New Products Editor

CLEARWATER, Fla. — Home Shopping Network, Inc. (HSN) recently installed a tandem switch and three automatic call distributors (ACD) from Rockwell Telecommunications, Inc. to clear up a call-handling bottleneck that is at the root of a \$1.5 billion suit the company recently filed against GTE Corp.

The retailer, which advertises on its own nationally broadcast cable television program merchandise that customers can order using toll-free telephone numbers, installed the Rockwell equipment to ensure that it was receiving all customer calls, including those the company claims it was losing because of equipment and services provided by two GTE subsidiaries.

In its suit, HSN alleges that some incoming customer orders were blocked from March 1986 to May 1987 by General Telephone Co. of Florida's central office switch, which is used to support HSN's order-entry center.

HSN further alleges that faulty GTE Omni switching equipment installed at HSN's order-entry center by GTE Communication Systems Corp. blocked incoming calls.

The problems resulted in the loss of an estimated \$500 million in revenue, HSN alleges. The suit also claims the problems forced the cancellation of HSN's plans to raise an additional \$400 million in financing and to launch a national marketing campaign. The \$1.5 billion suit also seeks punitive damages.

The suit was filed six months after a routine AT&T traffic analysis

showed some of the toll-free, long-distance 800 calls AT&T was delivering to GTE-owned General Telephone Co. of Florida were not forwarded to the HSN site.

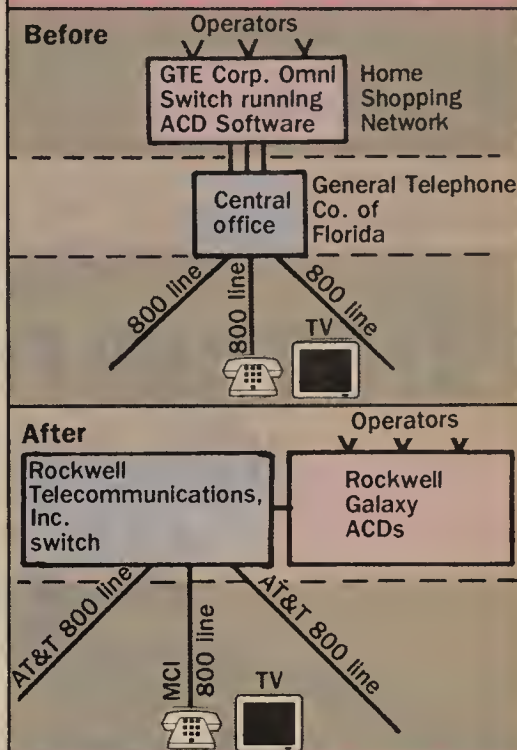
A spokesman for Stamford, Conn.-based GTE, parent of both General Telephone Co. of Florida and GTE Communication Systems, denied the allegations.

After discovering the alleged problems last April, HSN replaced the Omni switch with the Rockwell equipment, according to Bill Delany, senior vice-president of network operations.

Although Delany would not elaborate on the new system because of the pending lawsuit, sources close to the company said HSN is using a Rockwell Specialized Communications Exchange (SCX) tandem switch and three

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Home Shopping Network's automatic call distribution



Home Shopping Network (HSN) alleges General Telephone Co. of Florida's central office switch blocked reception of 800 service calls placed by HSN customers. HSN further alleges on-site GTE Omni private branch exchange configured as an automatic call distributor (ACD) also blocked incoming calls.

NETWORK WORLD CHART

CROSS TALK

BOB WALLACE

Bulk-buying deals hold mixed blessings for users, vendors

Vertical industry organizations such as Amerinet and the Insurance Value-Added Network Services Corp. (IVANS), recently discovered they can wield their mass-buying clout to achieve discounts on communications equipment and services, a development that holds mixed blessings for users and vendors.

Amerinet, a 2,700-member user cooperative representing numerous hospitals and health care organizations, recently used its bulk purchasing power to ink private branch exchange pacts with NEC America, Inc. and Northern Telecom, Inc.

Under these arrangements, the vendors' distributors allow the umbrella industry group to purchase up to \$500 million of communications gear. The private branch exchange distributors, not the switch makers, provide Amerinet with the gear price cuts ("Co-op inks cut-rate PBX pacts," NW, Oct. 5).

Last month, IVANS, a consortium of independent insurance agencies and major insurance carriers, gathered its collective buying power to secure a deal with MCI Communications Corp. that provides its members with a 10% discount on the carrier's daytime telephone rates.

It's likely that other vertical industry cooperatives will follow in the footsteps of these groups. The co-op approach to bulk-buying arrangements benefits both sides of the fence. Users realize substantial savings, and vendors can focus marketing efforts on vertical industry groups.

Users may also prefer doing business with vendors affiliated with their trade groups to eliminate the use of time-consuming and resource-intensive requests for proposal.

For Amerinet and IVANS, their buying clout will enable the organizations to pass discounts to members for PBX and long-haul services. Although many Amerinet or IVANS constituents already have PBXs or other telephone systems, they will be able to reap the benefits of the mass-procurement deals when they choose to replace or upgrade existing systems.

But bulk-buying deals may lock out options for users. Members of industry associations that have signed bulk-buying deals with switch makers would presumably be more inclined to buy from these vendors than from vendors outside of these agreements. A user migration to the co-op method

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ISDN

Intecom releases ISDN interfaces

Also pens sales deal with DCA.

BY BOB WALLACE

Senior Editor

ALLEN, Texas — Intecom, Inc. recently introduced Integrated Services Digital Network interfaces, a private branch exchange switch partition that can operate independently of the central switch and a pair of data interfaces that connect station equipment to Intecom's IBX digital PBX. The switch maker also said it had reached an agreement in principle with Digital Communications Associates, Inc., (DCA) of Alpharetta, Ga., to distribute its newest X.25 packet controller.

The Intecom ISDN interfaces include the DTI24 and the ISDN Station Interface, both supported by the Intecom Flex IM, an interface multiplexer.

The DTI24 is compatible with the CCITT ISDN Primary Rate Interface, which segments a T-1 line into 23 64K bit/sec B, or bearer, channels supporting voice or data and one 64K bit/sec D signaling channel. The product supports the Q.931 and Q.921 ISDN signaling protocols.

The ISDN Station Interface is compatible with the CCITT ISDN Basic Rate Interface. It enables a single station cable to support two 64K bit/sec B channels and a 16K bit/sec D signaling channel. Integrated voice/data workstations, Intecom station gear and personal computers are hooked to the Flex IM over distances of 4,000 ft using twisted-pair wire. The Flex IM is then connected to the IBX using a fiber-optic cable link covering up to 80,000 ft. Intecom said use of either ISDN interface will require the user to add several new software modules to the IBX. These modules, all members of Intecom's ISDN-NET family, will be included in a future release of IBX

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HSN installs Rockwell gear

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Rockwell Galaxy ACDs.

Sources said HSN has arranged to have AT&T and MCI Communications Corp. provide toll-free 800 services delivered directly to the SCX switch, bypassing General Telephone Co. of Florida.

The SCX tandem switch passes calls to the Galaxy ACDs. The ACDs are outfitted with an automated attendant feature that instructs callers with push-button phones to enter a "1" to be routed to an operator or, if they have an HSN customer code number, enter a "2" to place an order directly with HSN's host computer via a

voice-response system.

"Once a person has been established as a customer and has been given a customer code number, they can use the voice-response system," Delany said.

The voice-response system, developed by Precision Software, Inc. of St. Paul, Minn., works in conjunction with a Unisys Corp. host computer. The system asks callers placing orders to enter digits corresponding to information broadcast over the program. That data is passed via an RS-232 link to a local host, where it is stored in a data file. Delany said HSN also has a T-1 link between a Unisys computer in a second HSN building and its voice-response system.

GTE made a bid to build that

voice-response system, but HSN opted for Precision Software, in which HSN later acquired a stake.

In its suit, HSN alleges GTE knew its equipment could not handle the volume of calls expected and misled HSN about the switches' capabilities. HSN further alleges GTE maintenance workers tried to cover up Omni system logs that showed it was losing calls.

A GTE spokesman in Stamford did not deny HSN had telephone problems. He did, however, deny those problems were caused by the GTE Omni switch. "We're saying the Omni system was doing everything the specifications we designed said it would," he said. The spokesman also denied GTE overstated the capacity of the Omni. **■**

Intecom releases ISDN interfaces

continued from page 11

system software.

Intecom's beefed-up Satellite Switching Partition (SSP) adds a CPU to each switch module, allowing a remote switch unit to continue to operate independently if the IBX's main control unit fails or the link between the units goes down. The SSP consists of interface multiplexers, switching networks and a satellite master control unit. The SSP capabilities will become available with Release Level V.8 software.

Intecom also said it has completed testing of an interface, dubbed the LANmark Data Interface (LDI)-400, that allows LANmark to connect Wang Laboratories, Inc. VS minicomputers. Once connected to LANmark, a VS, using the Wang Systems Networking/Communications Networking Services protocols, can communicate with all other Wang minicomputers hooked to the network.

The second interface, dubbed the LANmark Data Interface, is a stand-alone device that provides a voice port and one of a variety of data interfaces for Intecom ITE telephone stations and terminal equipment. The stand-alone box is meant to reduce distributors' inventories because they will no longer have to stock the full range of ITE telephones with the different integrated data interfaces.

The PBX vendor said it will market DCA's DPAX-100 as the Intecom InteNet Packet Controller. This unit will provide users with up to 32 simultaneous asynchronous connections to public or private networks. Transmission speeds of up to 19.2K bit/sec will be supported on the asynchronous terminal side, while synchronous trunk connections will handle data transmission at 56K bit/sec.

The DTI-24 will be available in December 1988 and will cost \$3,575. The ISDN Station Interface will be available in May 1989 and will cost \$11,900. The LDI-400 is available now. A price for the unit was not listed. Intecom would not say when the InteNet Packet Controller will be available or what the product will cost. The company did not give availability or pricing data for the standard LDI. **■**

AT&T AND FOREST DATACOM SERVICES JOIN FORCES TO MAKE OFFICE MOVES MORE FLEXIBLE.

AT&T's Premises Distribution System (PDS) is a multi-functional systems design to support voice, data, graphics, and digital video communications on a customer's premises. It comprises cables, cross connects, adapters, electronic and protective devices which are arranged in a logical, coherent, and economical manner.

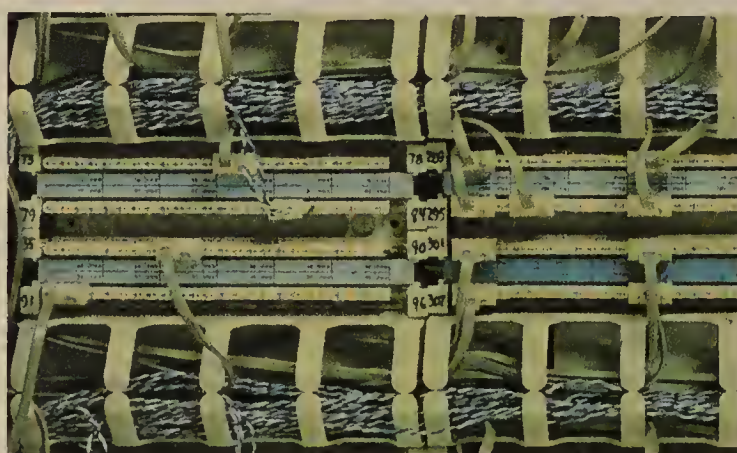
With PDS, it is now possible to use all your equipment (voice and data terminals) on the same wiring scheme—and even to plug voice and data terminals into a standard wall outlet.

Forest Datacom Services is an authorized turnkey installer of registered PDS in the greater New York area. Because of our installation expertise and experience, we offer a five-year



warranty on the performance and the workmanship of the system. Forest Datacom Services is also the pre-eminent single-source vendor in the data and telecommunications field. Our agreement with AT&T is just one of many recent agreements which

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AT&T
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Bulk-buying deals mixed blessings

continued from page 11

of PBX acquisition could also pose some problems for switch vendors.

Nonco-op vendors would be hard-pressed to match the equipment prices of their well-connected competitors.

Other vertical industry organizations may wish to explore the possibility of entering such agreements with their equipment and communications services vendors. Whether or not most members actually make use of the reduced cost buying bonanza is immaterial, the opportunity to save will remain. **■**

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Fujitsu's 19.2 Kbps modem is Trellis-coded and available with an optional six-channel TDM that supports up to eight channels of data, with speeds ranging from 2.4 to 19.2 Kbps.

Advanced diagnostics allow the user to monitor the phone line to ensure that critical standards such as

S/N ratio, receive level and phase jitter are maintained.

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DATA DELIVERY/ NET MANAGEMENT

“[Open Systems Interconnect] is meant to be an interconnection point between two networking solutions. The assumption is that, in most cases, the connection will be between proprietary networks provided by vendors such as IBM and others.

Ellen Hancock

President

IBM's Communication Products Division
Raleigh, N.C.

► NET MANAGEMENT

Cincom talks Net/Master

In the works: graphics package, support for other hardware.

While IBM has taken center stage in the network management market of late, Cincinnati-based Cincom Systems, Inc. has been quietly persuading users to trade in their Big Blue network management tools.

Users say Cincom's Net/Master, which was developed by the Australian company Software Developments PTY, Ltd., is easier to use than comparable IBM products and consumes less computer resources.

Recently, Network World Senior Editor Paul Korzeniowski talked with Walt Thomas, senior technical product manager for Net/Master, about the product and Cincom's view of the network management market.

Why did Cincom get into the

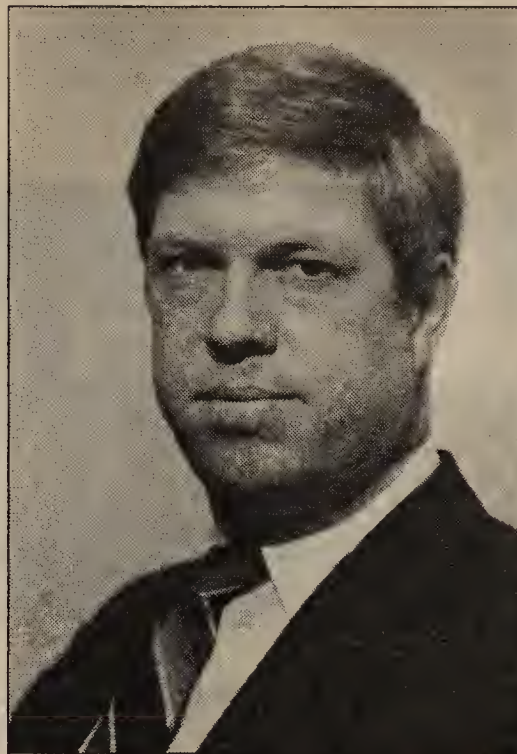
network management market?

Through customer surveys and market research, we found that users were not happy with the products they had. They felt the products didn't address their needs. We thought the products were grossly out of date, and we didn't see IBM putting major effort into the products. That is how third parties get into software markets.

Is there a need to add graphics capabilities to Net/Master?

Graphically depicting a network provides some benefits needed by our customers. So Cincom will come out with a tool that provides that capability. Whether we will develop our own tool or interface our package with a third-party product is a decision we have

See page 43



Walt Thomas

► TCA CONFERENCE

Paradyne modem multiplexes

MVM squeezes 3 paths on 1 line.

BY JIM BROWN

New Products Editor

SAN DIEGO — Paradyne Corp. recently unveiled a modem that employs multiplexing techniques to squeeze three data channels with different protocols onto a single leased line.

The modem was part of a barrage of products released at the Tele-Communications Association (TCA) 25th Annual Conference and Exhibition here. Paradyne also announced a fiber-optic channel-extension product, software that enables VTAM applications to support high-speed data transfer rates and software that links Paradyne's Analysis 6510 and 5530 network management systems to IBM's Net-View/PC.

The Paradyne 3455 Multiple Virtual Modem (MVM) is a multipoint 14.4K bit/sec modem that supports speeds up to 9.6K bit/sec on each of its three ports. Using a combination of time- and frequency-division multiplexing techniques, the modem creates, in effect, three virtual and independent full-duplex data paths, the company said.

The product's three ports can be either RS-232- or CCITT V.24/V.28-compatible.

Paradyne said the new product can be used in banking applications to support terminals, automated teller machines and branch security devices with different protocols, an application that usually requires three separate lines.

The product is compatible with Paradyne's Analysis 6510 and 5530 network management systems, enabling network operators to perform local and remote loop-back tests. The device can also be configured locally using front-panel controls. The modem features an internal dial backup capability that automatically establishes a dial-up link in the event of leased-line failure.

Paradyne's Universal Signal Processor digital signal processing architecture enabled the company to implement all circuitry for the new modem on a single board. Available in early 1988, the 3455 MVM will cost \$6,100.

Paradyne also released Pixnet-
See page 16

DATA DIALOGUE

MICHAEL LATRIANO

Expert systems for net management

The following is the first in a two-part series on expert systems for network management. Part 1 discusses the need for expert systems.

Data communications technology is expanding so quickly that network managers, no matter how experienced, are not always able to stay current.

Fortunately, this problem has been recognized by developers of advanced technologies, if not by the chief executive and financial officers of major corporations, who rely on data networks for the delivery of critical products and services. We are beginning to see the application of expert systems, a type of artificial intelligence (AI) technology, to the problems of network managers.

Applications that involve the manipulation of vast quantities of data — network management statistics, for example — are among the best candidates for expert systems.

Latriano is a consultant in the Management Consulting Group at Price Waterhouse in New York.

Composed of a knowledge base (a data base of facts and the rules for dealing with them), an inference engine (the system's data manager and query processor) and a user interface, expert systems can help network managers accomplish sophisticated and time-consuming tasks with limited resources. If the expert system program can't reach a conclusion based on input received from an on-line network monitor, it prompts the manager or operator to supply additional information. Because this information can be added to the knowledge base, the expert system can "learn" from experience.

Several major providers of data communications networks and products are currently using network management expert systems internally, and they anticipate providing these tools to customers in the near future.

The two aspects of network management — data network design optimization and problem resolution — will be described in their expert system contexts.

BBN Laboratories, Inc.'s Intelligent Systems Group and BBN Communications Corp.'s Net-

work Analysis Group began the Designet project as a collaborative effort in the fall of 1984. The Network Analysis Group now is responsible for providing ongoing enhancements to extend Designet's range of capabilities. The Network Analysis Group is the main user of Designet in support of its day-to-day network design activities.

Designet consists of proprietary expert system software, developed by BBN, running on a Symbolics, Inc. List Processing workstation with color graphics capabilities.

Designet is used by BBN to design new networks under proposal; for performance analysis and redesign of customers' existing networks; for design and study of networks by the BBN Telecommunications Consulting Group; to support the development and testing of protocols; to develop and explore network design algorithms; to prototype network components; and to expand BBN's knowledge of AI systems.

In order to come up with a good network design, Designet must know how to minimize network delay and response

See page 16

Paradyne modem multiplexes

continued from page 15

FX fiber-optic channel extenders at the TCA conference. The products link up to eight control units, such as 3803 or 3420 tape controllers, to the block or byte multiplexer channel of an IBM mainframe.

The Pixnet-FX Model 8870-X1 transmits at speeds up to 76K byte/sec to units located up to .62 miles from the host. The Model 8870-X2 employs a transmission buffer to improve throughput to 1.4M byte/sec over a distance of 1.24 miles. Available in November, the 8870-X1 is priced at \$17,500, and the 8870-X2 is priced at \$31,000. Paradyne lowered the price of the existing Pixnet-XL to

\$44,500 per node.

In addition, Paradyne released software supporting full-duplex data transfer between hosts outfitted with similar VTAM applications, enabling bulk data transfer

Inc.'s XCom 6.2, Cincom Systems, Inc.'s Net/Master, Software Research Corp.'s SNE/FTF and IBM's Bulk Data Transfer. XL/Xpress will be available in early 1988 for a license fee of \$10,000.

In the network management arena, Paradyne released software enabling its Analysis 6510 and 5530

Paradyne released software supporting full-duplex data transfer between hosts with similar VTAM applications, enabling bulk data transfer at speeds up to 1.544M bit/sec.

at speeds up to 1.544M bit/sec. XL/Xpress supports data transfer between such VTAM applications as The Systems Center's Network DataMover, Spectrum Concepts,

network management systems to link to IBM's host-resident NetView network management package via NetView/PC. Analysis 6510 and 5530 network manage-

ment system controllers monitor Paradyne modems, multiplexers and other devices and generate alarms when user-defined thresholds are exceeded. Paradyne's Analysis NV/PC software for the IBM Personal Computer accepts alarms from the controllers and converts them to NetView alerts. The alerts are then passed to the host.

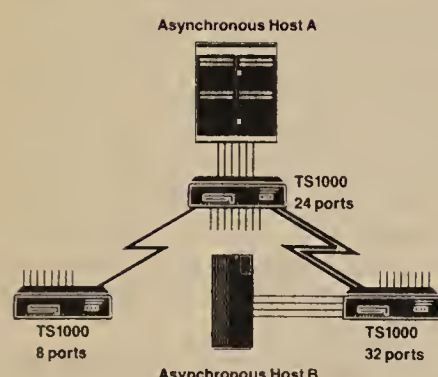
A network operator may view IBM and Paradyne networks from the same Systems Network Architecture terminal. The new software complements the Analysis/NetView Workstation, which was introduced soon after NetView was announced in 1986. That workstation appears as a 3270 terminal when attached to an IBM host, but enables both NetView and Analysis 6510 and 5530 data to be displayed in windows on the screen. The new software now enables Analysis 6510 and 5530 alarms to be stored with NetView historical data. Available in the second quarter of 1988, Analysis NV/PC will cost \$2,500.

Lastly, Paradyne upgraded its 3056 Basic Service Unit (BSU), a customer service unit/data service unit used with digital data services. The enhancement makes the 3056 BSU compatible with digital data services with secondary channel. Secondary channel support will enable Analysis 6510 or 5530 network management systems to monitor BSUs in a digital data service net. The 3056 BSU, which operates at up to 56K bit/sec, can also be outfitted with an internal modem that lets network operators access diagnostic information via dial-up facilities when digital data service circuits go down.

The 3056 BSUs supporting secondary channel diagnostic capabilities or an internal modem are available now and cost \$1,445. A version supporting both secondary channel and an internal modem costs \$1,695.

Paradyne Corp. is located at 8550 Ulmerton Road, Largo, Fla. 34641, or call (813) 530-2000. □

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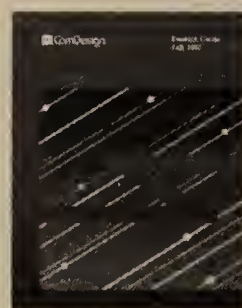
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Systems for net management

continued from page 15

time while maximizing network availability and reliability.

In addition, a good network design takes into account future growth requirements — to avoid excessive redesign and allow for orderly capacity expansion — factors in existing facilities and any restrictions on equipment and sites.

Creating and checking network designs involve complex, time-consuming calculations. The need for extremely powerful computers at reasonable prices has been an impediment to making products like Designet commercially available. The current proliferation of 32-bit microcomputers and parallel processing techniques should help eliminate the horsepower obstacle that has slowed the introduction of expert systems to the network management arena. □

Attention, innovative network users!
Get into the running for

Network World's Third Annual User Excellence Awards

If you're doing more than just talking about using networking as a strategic weapon, *Network World* wants to hear from you. We're looking for leading-edge network users — those who are employing state-of-the-art communications technologies and innovative management techniques — as candidates for our third annual User Excellence Awards.

We want to give the best and brightest of the network world the recognition they deserve. Just fill out the brief survey below and return it to us postmarked no later than Oct. 23. The winners will be featured in the Dec. 21 issue of *Network World*, and the awards will be presented at the Communication Networks 1988 conference in January.

**Please don't forget to fill in this block.
Your entry is invalid without this
information.**

COMPANY PROFILE

1. Please estimate your company's total revenue for 1987. _____
2. What is your company's total communications budget for 1987?
☐ Under \$500,000
☐ \$500,000 to \$1 million
☐ \$1 million to \$5 million
☐ \$5 million to \$10 million
☐ \$10 million to \$20 million
☐ More than \$20 million
3. Please estimate the percentage of your 1987 communications budget devoted to:
Voice communications equipment and services _____
Data communications equipment and services _____
Video communications equipment and services _____
4. Please indicate the size of your total full-time communications staff. _____
How many staff members are involved primarily with data communications? _____
With voice communications? _____
With video communications? _____

MANAGEMENT

5. Does your company have a separate communications department? _____
6. Does that department have budgetary responsibility for both voice and data communications expenditures? _____
7. What is the title of the department head? _____
8. To whom does the department head report? _____
9. Does the department head have equal status with the MIS or DP manager? _____
10. Are corporate departments charged for communications services? _____

Name _____
Title _____
Company name _____
Address _____
Phone number _____

11. Does your company currently have a long-term corporate communications strategy in place that encompasses all networking resources, whether voice, data or video? _____
12. Within your organization, does upper management support the implementation of a corporate utility network that serves all divisions and departments? _____
13. Is there someone in your organization assigned to monitor emerging new technologies and to test them to see if they are of strategic value? _____

CORPORATE NETWORK

14. Does your company currently participate in intercompany EDI (electronic data interchange) networks that provide direct links to suppliers? _____
To customers? _____
15. Do you resell excess network capacity to other companies? _____
In what other specific ways have you used networking to generate new revenue sources? _____
16. Are you currently deriving any strategic advantages by switching data traffic through PBXs? _____
Through Centrex facilities? _____
17. What specific architecture (TCP/IP, IBM's SNA, DEC's DNA, or other) is your data communications network based on? _____

18. How do you provide personal computer users with access to mainframe or minicomputer resources? _____
19. How many of each of the following are currently installed throughout your corporate network?
Mainframes _____
Minicomputers _____
Local-area networks _____
PBXs _____
Personal computers _____
Packet switches _____
20. Do you use gateways to link minicomputers, mainframes and local-area networks from different vendors? _____
21. Do you often participate in vendor beta tests? _____
If so, why? _____
22. Please indicate which of the following technologies are currently in use at your company:
Video teleconferencing _____
Mobile data terminals _____
Data encryption equipment _____
Remote telemetry _____
Networked, fully distributed data bases _____
Private bypass facilities _____
Network optimization software _____
Integrated voice/data T-1 links _____
23. Please use this space to indicate why you think your network is unique in a strategic sense: (space provided on reverse side)

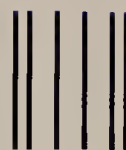
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your strategic
weapon?

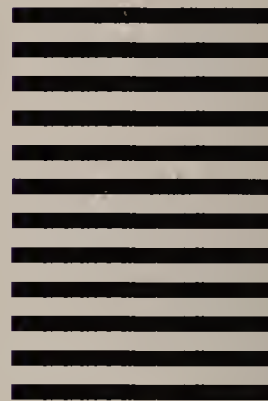
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LOCAL NETWORKING

► INFO '87

Users reveal LAN plans

Managers detail strategies for local net implementation.

BY PAULA MUSICH
Senior Editor

NEW YORK — Although use of local networks varies greatly among corporations, and they are still most often used to link a few departmental workstations, the strategic importance of the technology is increasingly recognized by corporate MIS and telecommunications professionals.

Communications managers at the recent Info '87 Information Management Conference and Exhibition discussed their local network strategies and the factors influencing those strategies with *Network World*.

Mark Brooks, network planning analyst at Sterling Drug, Inc. in

New York, is nearing the end of an exhaustive evaluation process for his firm, a Fortune 250 pharmaceutical and consumer products manufacturer.

"We're in the process of developing standards for hardware and

find out what equipment was out there, rather than just going with the market leaders," he said.

In the second phase, Brooks selected products to evaluate by setting up pilot installations within MIS. Products were chosen primar-

"I started out by doing a paper study of all the local-area network hardware and software vendors to find out what equipment was out there," said Mark Brooks.

software selection in a four-phase evaluation project that's been going on since January," Brooks explained.

"I started out by doing a paper study of all the local-area network hardware and software vendors to

ily from technical information provided by vendors. This phase, which he recently completed, allowed Brooks to develop product standards to be used in both domestic and international departments.

Installation and training materials will be developed within Sterling Drug's information center with the help of corporate telecommunications, Brooks' department.

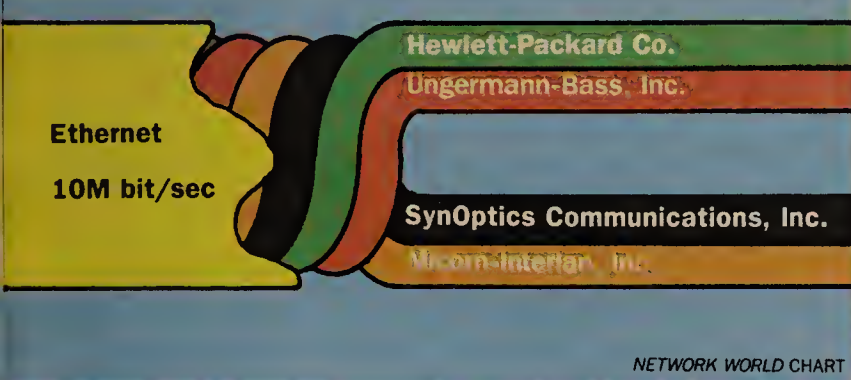
"Our fourth phase will be a non-MIS installation in which we will test the installation materials and training materials," he said. "We will revise the materials from there based on the feedback we get from users. Then we'll be ready to roll out local networks to any department that needs them."

The MIS, telecommunications and information center departments will each have responsibility for different aspects of the project. "The information center will be doing our up-front work with end users and will initially decide who will be candidates for local networks," Brooks said.

"Corporate telecom will become involved in actually configuring the system, planning out the hardware and doing the installation, including wiring. Then the information-

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Ungermann-Bass and Micom-Interlan join Ethernet-over-phone-wire fray



► ETHERNET

New entrants join twisted-pair race

BY PAULA MUSICH
Senior Editor

Local networking vendors Micom-Interlan, Inc. and Ungermann-Bass, Inc. recently joined the race to develop and market Ethernet networks that operate over non-shielded twisted-pair wire.

Micom-Interlan said it will work with SynOptics Communications, Inc. to develop Ethernet-over-twisted-pair products but will resell SynOptics' Lattisnet products until those products are completed. Ungermann-Bass announced it is working jointly with Hewlett-Packard Co. to develop interoperable Ethernet-over-twisted-pair products.

Ungermann-Bass and HP said each company will develop its own products but will share technologies to ensure that the products work together over twisted-pair wire.

Micom-Interlan also sponsored last week's meeting of the IEEE 802.3 study group, which is developing a proposal for a standard based on Ethernet-over-nonshielded

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LANMARKS

PAULA MUSICH

Expanding networks, evolving buzzwords

Stop making sense. If local networks were designed to cover short geographic distances and support a relatively small number of users, how come we keep trying to make them bigger?

It seems hardware vendors have done a decent job of overcoming the limitations designed into local-area networks with bridges, gateways, routers and so on. But in doing so, they've outpaced the capabilities of the network management tools that were designed to monitor and control the networks.

One user recently complained that, in order to manage all the Ethernet subnetworks linked into his wide-area net, he'd have to put in hundreds of devices and have individuals located at each area to operate those network management tools. That, he said, would send his costs through the roof.

Sadly, his problems are likely to get worse instead of better as more and more users connect to the various segments already installed in his wide-area net.

Because it's so easy to add on connections, this type of growth occurs on a weekly basis.

It is time for networking vendors and third-party communications software developers to start addressing these network management issues.

Without the means to centrally manage large and growing networks, growth in the wide-area network market may be stunted by users' inability to keep pace with the hardware technology.

Changing of the guard. As industry buzzwords go, the word compatibility seems to be on the wane.

Hastening its departure is the fact that it never meant what users expected it to mean. Although users expected that two products that were "token-ring compatible" would actually work with each other, the vendors of those products really meant that they each implemented the same protocols in their own, unique way.

Because so many users have been burned by the differences between expectation and reality, they now are not as readily buying into the idea of compatibility.

A new buzzword has come to the fore, however. Replacing compatible is the word interoperable.

Now, doesn't this sound like what users are really seeking? It seems to imply that two products that are interoperable actually work with each other.

It should be interesting to see how long this word lasts before it is abused to the point of meaninglessness. ■

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Corporate America is asking for custom hybrid networks, and Northern Telecom is responding as the leading supplier to their systems integrators.

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Meridian Network Services,* applications which include corporate carrier services, advanced calling features, local area networking, conferencing, voice mail and other advanced networking services.

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And Meridian SuperNode,* a powerful new fault-tolerant network node that gives corporations with large, complex networks the same capabilities we provided to local and interexchange carriers with the introduction last July of DMS SuperNode.*

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NETWORKING

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Users reveal LAN plans

continued from page 17

tion center will handle trouble-shooting, training and end-user problems," he said. "Corporate telecom will ultimately tie the local networks into a wide-area net, where we would be able to monitor all the file and gateway servers and do daily backups of data.

"We have a large IBM mainframe environment and a number of DEC and Wang CPUs," Brooks said. "We're trying to maximize our investment in all of our computer resources. It looks like local networks will help us do that, but our plans are still in the formative stages."

Many Info attendees said they felt the ability to use local networks to access corporate data on host computers was or would be an important part of their network buying decisions.

"We definitely need the capability of connecting to a host computer — especially where our customers work with an on-line data base," said Terry Adams, director of data communications for financial service bureau Northeast Datacom, Inc.

"We've been primarily a mainframe operation with dumb terminals," he explained. "Three years ago, we started to get involved with PCs. Different departments acquired the PCs for themselves, and now we're trying to pull that back together in some cohesive manner.

"I don't think we've formulated a true strategy yet; we're just in the early stages of seeing what lo-

"Overall, we see the direction going to networking. We'll be looking to see what the advantages of networking would be for us," Albert Sausville said.

cal networks can do for us," Adams said.

After some preliminary research on local network technology, Charles Sanderson decided that local networks would not effectively meet his company's connectivity needs. "We have one mainframe that supports the data bases of six of our manufacturing entities. That's a substantial amount of data," said Sanderson, corporate director of information services for Risdon Corp., a cosmetic packaging manufacturer.

"We want PC users to be able to talk to that mainframe in real time. If I went with the LAN approach, it wouldn't give these users the on-line, real-time access to the data base we've amassed on the host, unless I don't understand the LAN concept," Sanderson said.

The Savings Bank of Utica, N.Y., just recently added a micro-computer specialist to its operations department, according to Vice-President of Operations Albert Sausville. "We're seeing more and more micros — used mostly for stand-alone applications at this point," Sausville said. "But overall, we see the direction going to networking. We'll be looking to see what the advantages of networking would be for us. We're just in the preliminary stages."

Most of the bank's processing is done on a Burroughs Corp. mainframe with a separate consumer loan-tracking system running on a Digital Equipment Corp. PDP 1184, Sausville said. "It's a question of what applications are out there that aren't on the mainframe that we could benefit from." □

Entrants join twisted-pair race

continued from page 17

twisted pair. The group hopes to receive official status as a standards-writing committee at the Institute of Electrical and Electronics Engineers' plenary meeting in November.

Ungermann-Bass' products, which will be officially introduced in the first quarter of 1988, will use HP's filtering and wave shaping technology at the physical level.

These capabilities will be available in both a 12-port concentrator, typically located in a wiring closet, and at the twisted-pair access unit used to connect a workstation to the cabling, according to Chuck Elliott, product line manager for media products.

Ungermann-Bass' offerings will use two twisted-pair cables and will support distances up to 100 meters or 330 ft from concentrator to access unit. Up to 12 concentrators can be connected, supporting up to 144 connections.

Concentrators can also be connected to an Ethernet backbone, which can use broadband or baseband coaxial cable, or optical fiber,

according to Bill Bailey, Ungermann-Bass product manager for Ethernet-over-twisted pair.

Ungermann-Bass' product will also be electrically powered, and the concentrators will include enough intelligence to perform some network management functions.

Although Micom-Interlan would not release any details of its planned offering, product marketing manager Joe Skorupa commented on his company's plans to market SynOptics' twisted-pair transceiver and Lattisnet hub.

"We will actively resell the 505 [transceiver] in the short term, and we will use their technology on our boards in the future to drive the cost down," he said. "If we can incorporate SynOptics' [very large-scale integration] technology directly into our products, that lowers our cost and lets us bring the product to market at a much more attractive price."

Micom-Interlan will release pricing and availability information on the SynOptics products it will resell within 30 days. □

COMMUNICATIONS MANAGER

How to sell networking projects to upper management

1. Sell the benefits, not the technology.
2. Be prepared to offer lower cost alternatives to your ideal project.
3. Know your organization's process for approving capital expenditures.
4. Be accurate in analyzing costs.
5. Demonstrate that you have the personnel and expertise to exploit new technology.
6. Enlist the support of in-house experts.
7. Carefully explain all risks associated with the project.
8. Remember that enthusiasm is contagious.

SOURCE: RACAL-MILGO, INC., SUNRISE, FLA.

MANAGEMENT OUTLOOKS

Users: technology not key to strategic edge

Say state-of-art tools don't guarantee advantage.

BY MICHAEL FAHEY

Senior Writer

SAN DIEGO — Users do not need state-of-the-art technology to put communications to strategic advantage, according to managers who attended the Tele-Communications Association (TCA) 25th Annual Conference and Exhibition held here recently.

Some users are daunted by the competition-

crushing networking investments made by corporate giants such as American Airlines, Inc. But, said Jack Kamoske, voice systems consultant for Rexnord, a Fortune 500 manufacturing company headquartered in Milwaukee, "You don't need sophisticated technology to use communications to help your business. The goal isn't to be impressive. The goal is to be effective."

Kamoske said a small investment in equipment that improves an organization's ability to handle incoming telephone calls, for example, can improve sales and marketing. For less than \$300, according to Kamoske, a secretary can be provided with a multiline phone that enables the answering of unattended phones using the called party's name. "That helps the company's image in the eyes of the person calling," Kamoske said. "That's very important if you depend on service to sell a product."

Even something as simple as training staff members in the proper use of existing call-forwarding features can improve an organization's image with its customers and suppliers, while also bolstering the bottom line, Kamoske said.

An automatic call distribution (ACD) system added to an existing private branch exchange can improve a business's ability to handle orders for its products at a reasonably low cost, Kamoske said. "You can buy a stand-alone call distribution system for anywhere from \$20,000 to \$80,000," he said. An ACD system can be combined with a toll-free 800 number to create an effective sales tool, he pointed out.

Kamoske works in his company's corporate telecommunications department and provides consulting services to Rexnord's divisions.

He said meeting with the company's end users and discussing their daily operations helps him develop communications services that meet their business needs. "Often, when we first start talking, the users will say there is nothing they can think of that I can provide to help them," Kamoske said. As the discussions continue, however, new and effective applications of available technology often emerge.

Home Federal Savings & Loan Association, a savings bank chain based here, attracted \$100 million in new business last year by advertising an 800 number in major U.S. newspapers.

The advertising campaign, designed to attract out-of-state customers needing California banking services, was supported by an ACD system, said John-David Hughes, section manager of network planning for Home Federal.

Like Kamoske, Hughes stressed the importance of meeting with users to formulate communications strategies that meet their needs.

Gene Taylor, planning supervisor in the telecommunications department of San Diego Gas & Electric Co., warned users to beware of "yuppie products" designed to convince them that they can solve communications problems by throwing money and technology at them.

Taylor said that rather than concentrating

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DIALOGUE

What do you gain by attending the Tele-Communications Association's conference?

"It gives me an opportunity to check out the newest developments in equipment and technology and to associate with my colleagues. It is also a change of pace from my usual schedule. It is a way for users and vendors to meet in a relaxed setting. And let's not forget the happy hours."

William Ziefle

Analyst coordinator III
Network communications systems
Great American First Savings Bank
National City, Calif.

"I'm interested in the vendors' exhibits and in attending some of the seminars. I thought the call for papers was very interesting. I would have liked to have seen more network manage-

ment products and more videoconferencing exhibits.

Thomas Sabbe

Telecommunications analyst
Corporate Information Systems
Litton Industries, Inc.
Beverly Hills, Calif.

"I've been attending for 25 years, and every year it's great to catch up with old friends. And of course, it's always good to see the exhibits and attend the seminars and classes."

As a charter member of the organization and a former corporate board member, it is amazing to see the way the conference has grown. In the early years, we had only a handful of exhibitors.

Robert Hynes

Telecommunications engineering manager
Times Mirror Co.
Los Angeles

GUIDELINES

RICK MARGOLIS

The education of a manager

As managers and professionals, most of us have no problem managing our own output. We work smart, diligently apply our experience and skill and obtain good results. We act out a simple performance principle: Effort produces results, and results pay off. We know how to make things happen. We are proven performers.

But things are not so simple when we are managing other people. We assign tasks that don't get done according to our expectations or standards. We seem to spend a lot of time putting out fires, sending memos that mysteriously vanish, picking up the pieces or muttering one-liners to no one in particular, such as, "It's hard to get good help." The truth is that it's hard to

become a good manager. Effective managers who help others contribute to the organization and derive satisfaction from their efforts require as much skill as technical functions.

Many managers act as if their associates know what they are supposed to do without being told. After all, many managers reason, my associates were told what to do when they were hired.

The first step in helping other people be effective is for managers to communicate, review, compare and prioritize their expectations regularly. One way to do this is for the manager and associate to prioritize the associate's functions independently. The differences that appear can be startling.

For example, a consultant called in to improve customer relations in a national chain of apparel stores was told by the regional sales manager that the job of clerks

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Margolis is director of program development for MAGE Centers for Management Development, a management consulting firm in Boston, Montreal and Toronto.

Technology not key to edge

continued from page 21

on the latest technology, users should focus on understanding the issues affecting their companies and industries.

The utility recently installed a fiber-optic network that circles the city of San Diego. The company was able to use the rights-of-way it owns for its utility lines to run the fiber. For other companies, without similar rights-of-way, a fiber network may not make sense, Taylor said.

San Diego Gas & Electric is exploring the idea of using its network to tie directly to its customers to offer energy management

programs, Taylor said. This could lower the cost of the energy provided by San Diego Gas & Electric and help the utility maintain its customer base.

Taylor said some companies are turning to cogeneration, burning their waste products to provide energy. "We're being bypassed like the phone company," he said. Tying directly into users and offering energy management services could eliminate this trend.

While putting communications networks to strategic advantage is an important issue for TCA members who attended the conference here, cutting costs and maintaining reliable service are also of vital concern.

"Our management sees the network as critical to our operation," said Home Federal's Hughes. For that reason, Hughes said, maintaining network uptime and instituting a disaster recovery plan are as important to his operation as using it to gain a business advantage.

Hughes said he has pledged to slash between \$300,000 and \$500,000 per year from his voice costs. Meanwhile, he said he expects to keep his data transmission costs level while adding or moving one location per month to the bank's network.

According to Hughes, optimizing the network and maintaining strict control of equipment and services enables the bank to expand its nets while offering less expensive and more reliable service. ▀

The education of a manager

continued from page 21

was to wait on customers and sell them merchandise. When he talked with clerks, the consultant was repeatedly told their No. 1 priority was to straighten out the stock, that the customers could wait.

After establishing that people know what they are expected to do, effective managers check to make sure their associates are actually able to do what is required. Depending on prior experiences and skill levels, training or modeling of desired behaviors may need to be provided.

After associates know what to do and how to do it, performance goals should be set. Performance goals are powerful means of motivating people and helping them become more productive. Goals are stated in terms of the behavior necessary to accomplish them. Behaviorists have said that if we can see a behavior, we can measure it. And if we can measure a behavior, we can influence whether the behavior occurs more or less frequently. Managers respond to behavior in one of three ways: positively, negatively or not at all. The most common managerial style is the latter.

One systems analyst worked for a month under a deadline to prepare recommendations on the current information needs of a manufacturing division. The extensive report was completed and left on his superior's desk. After not hearing anything about the report's status, the analyst asked his supervisor for some feedback. The supervisor shrugged apologetically and said she had passed the report along to her supervisor, who had not volunteered any information.

The lack of feedback had become institutionalized in this firm. The analyst felt deflated, as if his work did not matter. His morale and productivity diminished. Effective managers care about people, their behavior and the consequences of behavior. These managers use feedback to acknowledge and praise performance. Effective leaders recognize that feedback is the greatest contributor to increased personal and organizational effectiveness. Accordingly, after performance goals have been agreed upon, effective managers actively seek out instances of their associates' demonstrating goal-oriented behavior and then offer genuine praise.

But what if an associate is doing a substandard job? After all the goal-setting and praising, this person is still not cutting it. When a person is able to do the job but won't, the feedback takes on the form of a reprimand. Reprimands require responding to the inappropriate behavior as close to the time of occurrence as possible; communicating your disapproval and true feelings about the specific behavior; and expressing to the individual that you still value the person — it is the behavior you do not condone. After the reprimand is over, it is over. ▀



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- ▶ Octel voice-processing system

VOICE MESSAGING

AT&T updates Audix with network feature

Voice conference with data exchange also bows.

BY JIM BROWN
New Products Editor

NEW YORK — AT&T recently announced software that enables up to 100 of its Audio Information Exchange (AUDIX) voice-messaging systems to be linked in a network.

AT&T also announced two voice-conferencing services based on its Accunet Switched 56 service that enable participants to exchange digital data and documents.

The AUDIX update included a version of the voice-messaging system that interfaces with AT&T's analog Dimension and System 75 Model 1A/1B private branch exchanges, as well as other vendors' PBXs. AT&T said it will work with customers to interface the new AUDIX, dubbed the AUDIX Standalone, to their PBXs.

Existing AUDIX models integrate with AT&T System 85 and System 75 digital PBXs via an X.25 data line.

When used with switches from other vendors, each port of an AUDIX Standalone unit must be linked via a PBX analog tie line port.

The new AUDIX Enhanced II software enables users to forward messages from

one AUDIX system to another using digital transmission facilities operating at speeds up to 64K bit/sec or traditional analog leased lines outfitted with modems. With the software, users can designate whether outgoing messages should be sent immediately or held for bulk transmission at the end of the day.

AUDIX is also capable of integrating with System 85 PBXs linked via AT&T's Distributed Communications System, which makes a series of System 85s appear as a single unit.

The enhanced Audix software also enables users to configure message systems to act as automated attendants, greeting callers with recorded messages that instruct them to enter digits from a push-button phone in order to connect to an operator, department secretary or AUDIX voice mailbox.

When used with systems that do not support telephone message-waiting indicators, users can configure AUDIX to ring their extensions when they receive a new message. This feature also enables users to instruct AUDIX to call their homes or other telephone numbers when new messages arrive.

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ANM/NX WARE

Infotron mux manager out

BY JIM BROWN
New Products Editor

SAN DIEGO — Infotron Systems Corp. introduced at the recent Tele-Communications Association (TCA) 25th Annual Conference and Exhibition here a tool designed to manage its Infostream NX 4600 or NX3000 Network Exchange T-1 multiplexers.

The firm's ANM/NX software, which runs on an IBM Personal Computer AT, can monitor and control up to eight NX4600 or NX3000s. Each NX4600 supports up to 96 T-1 links providing up to 4,000 local channels, while each NX3000 supports four T-1 links providing up to 96 local channels.

The new software includes a mapping feature that superimposes selected network segments or the

entire network over a geographical map. It also details the configuration information for each multiplexer.

The Network Exchange images on the screen will change color to show when a link starts to exceed user-defined thresholds and again when it is experiencing a critical condition. Those color-coded alarms are also logged into a system data base. The ANM/NX will log up to 500 alarms. Once the memory is full, the data can be stored to a personal computer disk or a remote mainframe.

In addition, the software enables an operator to trace individual channels through the network. During that trace, all nodes, slaves and links through which the channel passes as it travels the network will be displayed. An oper-

ator can use the system to request the configuration information of any Network Exchange, generate a topology map and print any screen-displayed data.

ANM/NX software can be used to perform the operator console tasks for any Network Exchange in the network. Up to 16 operators can access the ANM/NX software via individual passwords. Available in December, ANM/NX software costs \$15,000.

Infotron also unveiled an entry-level version of its Integrated Network Manager, the INM200. The package is aimed at smaller T-1 backbone networks or sub-T-1 networks that feed into a larger Network Exchange-based T-1 backbone net.

The package runs on a multitasking computer and

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XEROX

Xerox PC package controls fax net

BY JIM BROWN
New Products Editor

SAN DIEGO — Xerox Corp. released software that enables a personal computer to act as a hub in a facsimile machine network at the recent Tele-Communications Association 25th Annual Conference and Exhibition here.

The software, FaxMaster 21, provides the necessary conversion between ASCII data and facsimile formats, enabling documents scanned through a plain-paper Xerox Telecopier 7021 to be stored on the personal computer's disk.

Personal computer users are able to create a document and send it to remote facsimile machines via the Telecopier 7021, or they can store documents received by the Telecopier 7021.

Users of personal computers can access and edit documents by using Z Soft, Inc.'s PC Paintbrush Plus or Media Cybernetics, Inc.'s Dr. Halo II software packages.

FaxMaster 21 software runs on Xerox 6065, AT&T 6300, AT&T 6310 and IBM Personal Computers operating under MS-DOS 3.1. The copier is linked to the microcomputer through an RS-232-C interface.

When the Telecopier 7021 runs out of paper, it will automatically store incoming documents to the personal computer disk. An average document requires 24K bytes of disk storage space.

PC routes documents

Users can also maintain document distribution lists on the personal computer and, with commands issued from FaxMaster 21, send documents to individual facsimile machine users.

FaxMaster 21 enables users to configure the Telecopier 7021 to poll remote facsimiles and retrieve documents waiting for transmission to the central site.

FaxMaster 21 can be configured as the hub of a facsimile mail network, allowing remote users to dial into the central site using a security code and print out a list of documents stored in their mailboxes or retrieve documents.

The software enables remote users to enter commands via push-button telephones or from Telecopier 7021 control-panel buttons.

A stand-alone Telecopier 7021 is capable of storing as many as 60 documents in its 1M byte of random-access memory. The device can distribute a copy of a document to as many as 99 different locations.

Compatible with CCITT Group III and Group II facsimile machines, it transmits a page in 15 sec and uses plain paper. The Telecopier 7021 can be used as a plain paper copier, and it can act as a personal computer printer.

Pricing information

Targeted at users that send 1,500 facsimile documents a month, FaxMaster 21 can be added to existing Telecopier 7021s for \$695. The price for a Telecopier 7021, FaxMaster 21 and RS-232-C port is \$5,295.

Xerox Corp. can be reached by writing to Xerox Square 06B, Rochester, N.Y. 14644, or by calling (716) 423-5078. □

First Look

WU offers packet net access via 800 lines

Western Union Corp. recently announced that it now provides access to its packet-switching data net-

work through the company's own 800 dial-up service, thereby increasing the number of access points to that network.

800 Data is the first packet-switched data service to interface directly with local exchange telephone companies using other than standard business lines, according to the firm.

Customers using the company's packet-switched

network will be able to dial a single 800 number to access the service without incurring message-unit or toll charges within local access and transport areas.

Western Union's 800 Data service supports speeds ranging from 300 to 2,400 bit/sec. End-to-end error protection will be implemented by the first quarter of 1988 by using the X.PC protocol to dial

into the packet network.

Access charges for the services will be 12½ cents per minute (\$7.50 per hour). The 800 Data Service will be available in 150 LATAs by the end of the year and to all 190 LATAs by mid-1988, according to Western Union.

Western Union Corp., 1 Lake St., Upper Saddle River, N.J. 07458, or call (201) 825-5277.

Product prevents unauthorized access

Digital Pathways, Inc. recently introduced a host-independent product that allows users to guard their X.25 packet links against unauthorized access.

According to the vendor, **SecureLink X.24 (SLX)** acts as a "security gate" that screens access requests to connected hosts.

UNIVERSAL DATA

Modem price cut by 36%

BY PAULA MUSICH
Senior Editor

NEW YORK — Motorola, Inc. subsidiary Universal Data Systems, Inc. (UDS) recently announced it will drop the price of its 9.6K bit/sec V.32 modem to \$1,595, a 36% cut.

UDS President George Grumbles said users that bought the modem at its originally suggested \$2,495 price will receive rebates, and all backlog orders will reflect the new pricing. The modem, introduced earlier this year, is compliant with the CCITT V.32 standard for 9.6K bit/sec full-duplex operation.

The price cut is intended to make the V.32 modem more competitive with non-standard, or asymmetrical, 9.6K bit/sec modems and to pave the way for greater acceptance of the standard. "V.32 is here. If we can move the price closer to that of the asymmetrical modems, we can take away the concern over end-to-end compatibility," Grumbles said.

Initially, V.32 modems experienced performance problems. The asymmetrical modem makers overcame those problems with proprietary techniques, according to Grumbles. He said the patented echo-cancellation design used in the UDS modem provides competitive performance within the specifications of the standard.

Strategy

The price cut and standard offering are also intended to move UDS away from special applications for OEM sales and toward end-user sales.

Universal Data Systems, Inc. is located at 5000 Bradford Drive, Huntsville, Ala. 35805, or call (205) 837-8100. □

You can't manage a bu don't leave your

It's not just how you manage your business, it's how you manage your business in the long run.

Specifically, if you're not managing information with a long-term strategy in mind, you might run

AT&T comes through with a full range of options to keep pace with your business.

into problems later on—problems that may be costly to resolve.

Consider- ing this notion, AT&T designed an "open-ended" approach to information management solutions. This gives you the freedom to use AT&T equipment with most other vendors' equipment—which means you'll avoid the problems that can come up when you're locked into just one vendor.

Chances are, you've heard other vendors talk about connectivity and flexibility, but the problem is, it's within their own system. At AT&T, we offer it from one system to another.

Since we take a communications-based approach, our design will allow you to move information around the world linking people, companies and continents. Therefore, it has the flexibility to offer you a variety of options to customize your information system as your business grows and changes.

With our communications expertise, we're able to extend communications control and the power of the AT&T Network into your own hands. Using an AT&T PBX and our departmental computer capabilities, our design will free your mainframe computers from managing communications—allowing them to do the tasks they were meant to do.

And to make service as efficient and complete as present-day technology will allow, you'll also have the capability of end-to-end network management.

In short, our open-ended solutions will allow information to be readily available and give you the flexibility you need to handle your business

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now and in the future.

So before you choose a company to manage your information networking needs, consider your options.

Because somewhere down the road, you don't want to find yourself painted into a corner.

For more information about our open-ended

Packets requesting access are blocked, and a dialogue is conducted between the remote user and the SLX to determine if the caller is authorized.

Access control is based on the user security profile stored in the SLX, which can protect up to 32 virtual circuits.

The vendor said the SLX can be used to protect any type of computer, regard-

less of the operating system or other devices connected to the network. Various levels of security, including passwords, time of day, day of week and network source addresses, can be defined on a user-by-user basis with the SLX.

A limited number of production units will be available to selected customers during December, according to the vendor. Volume

shipments are scheduled to start in February 1988.

Pricing

The list price for each SLX is \$12,500. Orders placed before Feb. 1, 1988 will be offered at a \$10,000 introductory price.

Digital Pathways, Inc., 201 Ravendale Drive, Mountain View, Calif. 94043, or call (415) 964-0707.

GEISCO to offer CAD/CAM service

General Electric Information Services Co. and Microdynamics, Inc. recently announced a marketing agreement to offer a computer-aided design and manufacturing transmission service to apparel and footwear manufacturers.

The new service, called **MicroNet**, is designed to

let apparel and footwear manufacturers compose designs, patterns and markers at their headquarters or design centers and transmit the results electronically to their manufacturing facilities or contractors in North America, Europe or Asia.

MicroNet provides encryption security, mailbox support and file tracking.

General Electric Information Services Co., 14001 Dallas Pkwy., Suite 750, Dallas, Texas 75240, or call (214) 788-8287.

Call-accounting for key system unveiled

Tel Plus Communications, Inc., a Siemens AG company, recently introduced a new feature for its 8/16 key telephone system to allow small companies to take advantage of sophisticated call-accounting capabilities.

The 8/16 is Tel Plus' smallest key system, with up to eight lines and 16 stations. Call accounting is made possible on the system through a new RS-232 port, which allows the attachment of a Tel Plus Mini-printer. When combined with system software and optional peripherals now available for the 8/16, the printer produces call-record output and call-accounting reports, including call cost accounting, client billing, use analysis and productivity management.

The vendor also announced a new display telephone for the Tel Plus 8/16, featuring a 48-character display that provides camp-on indications, message waiting, automatic timer and line identification.

According to the vendor, the call-accounting package is available for about \$3,000 and the new display telephone for the 8/16 costs \$260, not including installation.

Tel Plus Communications, Inc., A Siemens AG Company, is located at 8000N Federal Highway, Boca Raton, Fla. 33431, or call (305) 997-9999.

Voice-processing system enhanced

Octel Communications Corp. recently introduced an expanded version of its Aspen Branch voice-processing system that increases the number of simultaneous calls it can support by 2½ times.

The **Aspen Branch XP** supports all of the software See **Octel** page 26

Business properly if you options open.

information management solutions, talk with your AT&T account executive or, for the number of our office nearest you, call 1 800 247-1212.

From equipment to networking, from computers to communications, AT&T is the right choice.



Octel from page 25
available for the Aspen, Aspen Branch and Aspen Maxum products, including application software for voice mail, telephone answering, automated attendant, call processing and information dissemination. According to the vendor, the Aspen Branch XP provides from four to 16 ports and from 6.2 to 12.4 hours of message storage. It is housed in a 21- by 21- by 14-in. cabinet.

Suggested retail prices range from \$38,000 to \$72,000, not including installation, terminal, printer and maintenance. The Aspen Branch XP is available now.

Octel Communications Corp., 890 Tasman Drive, Milpitas, Calif. 95035, or call (408) 942-6500. ■

AT&T updates AUDIX with feature

continued from page 23

AUDIX digitizes incoming analog voice at 64K bit/sec using pulse code modulation. It compresses that voice to 16K bit/sec for storage using adaptive differential pulse code modulation.

AT&T also increased the capacity of its low-end AUDIX-S from 750 users to 2,000, doubled the number of ports to 16 and doubled the storage capacity to 40 hours. The firm priced an expanded 16-port AUDIX-S with 40 hours of storage at \$116,000. The larger AUDIX-L supports up to 4,000 users, 32 ports and 196 hours of storage.

AUDIX-S users can upgrade to

the enhanced software for \$100, while AUDIX-L users can upgrade for \$500.

AT&T also announced its Accunet Switched 56 Digital Broadcast Capability, which enables Accunet Switched 56 service users to exchange digital data during a conference call or take part in a full-color motion video teleconference. Using a 700 number, one user is required to call an AT&T hub facility in Houston, Cleveland or Ojus, Fla., to create the conference. Users wishing to join the conference also call into that facility via the same 700 number.

The Houston and Ojus facilities

enable up to 12 callers to join the conference, and the Cleveland facility will support up to 24 callers. Each location calling into the conference is charged 30 cents a minute above the usual Accunet Switched 56 service fees, which average 75 cents a minute.

AT&T also announced it is awaiting tariff approval for its Alliance 3000 Service, which will enable up to 59 Accunet Switched 56 users to join a teleconference. Users can employ the service to establish a voice conference call that is also capable of displaying a common graphic image on receiving computer screens that all users in the conference can modify.

Alliance 3000 requires the use of the Telematic Services protocol, which was developed by the Consultative Committee on International Telephony and Telegraphy and is used in facsimile transmission. It also requires one audio connection to establish call set up and control.

Costs

The cost for each location joining an Alliance 3000 conference call is expected to be about 75 cents a minute in addition to the usual Accunet Switched 56 charges. ■

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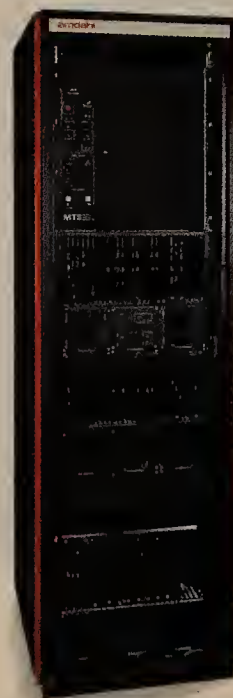
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Infotron mux manager out

continued from page 23

enables a central site operator to manage networks that consist of Infostream 1500 multiplexers, Infostream NX4600 and NX3000 Network Exchanges, 990 and 992 Network Processors and statistical multiplexers.

The system detects problems, isolates faults and restores service via an automatic alternate routing feature. Using color graphics and multiple windows, the system is capable of monitoring the network, performing diagnostics on a net-

The system can monitor the network, perform diagnostics on a network node and alter the configuration of a network node.

work node and altering the configuration of a network node.

The system receives and displays network status data in real time. That data can be stored in the system's data base and be used to create reports on network traffic, trend analysis and event logs.

The currently available system — which includes hardware, software and modules that interface to the Infotron networking equipment — costs \$29,500 for networks that use only one type of Infotron network product. For networks that use two or more different Infotron products, the price is \$37,000.

Infotron Systems can be reached by writing Cherry Hill Industrial Park-9, Cherry Hill, N.J. 08003, or call (800) 345-4636. ■

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For more information on Alcatel and the Alcatel Business Systems companies, call 1-800-556-1234 (ext. 247) or in California 1-800-441-2345 (ext. 247); or write Alcatel Business Systems, 2350 Qume Drive, San Jose, CA 95131.

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Opinions

NETWORK MANAGEMENT

CLARE FLEIG

Wide-ranging LAN choices

If network managers and users thought they had lots of options in local-area networking before, they had better look again. Several significant changes in local net wiring schemes, application availability and network options have occurred in just the past few weeks.

For example, Ethernet, through a joint development agreement between Digital Equipment Corp. and 3Com Corp., now runs on nonshielded twisted-pair wiring, as does Arcnet via new products introduced by Standard Microsystems Corp.

Another new option is fault-tolerant local-area network products now available from both Novell, Inc. and 3Com. Novell's latest release of NetWare, SFT 2.1, enhances its fault-tolerant network offerings, while 3Com's joint marketing agreement with Atlantic Microsystems, Inc. represents its first move into fault-tolerant network sales.

Proliferating local net options and strong market growth increase the risks for unwary users. As the complexity of the choices increases, so does the need for comprehensive planning. Yet that planning is often ignored or completed in a rapid, haphazard fashion to beat a purchasing or installation deadline.

Even more alarming are cases in which planning is done in a logical and methodical manner but with a skewed focus. The most common such error is to plan a local-area network using a local-area networking per-

spective. Network managers can no longer afford to plan for local networks by looking just at departmental or even companywide communications needs. Instead, managers must use a wide-area network perspective to plan for local-area networks.

The reason? The local-area network that is installed in the purchasing department today will require integration into a larger companywide or even global communications network tomorrow, as services based on Integrated Services Digital Networks, IBM's NetView and Digital Equipment Corp.'s DECnet offerings mature.

In these future wide-area nets, which are likely to pass local nets in growth sometime in the mid-1990s, local nets will simply be local communications interfaces, important to the network as a whole but certainly not ends in themselves. The transition mirrors the evolution of the personal computer, which began its corporate role as a stand-alone processor only to be transformed into a shared resource by local net connections.

What's more, vendors are beginning to provide tools and products to make planning less complex and more compatible with future wide-area communications offerings, including ISDN, X.25, X.400 and Open Systems Interconnect (OSI) standards. In the last few weeks, minicomputer vendors Data General Corp. and Hewlett-Packard Co. have made promises to increase X.25 compatibility.

In September, HP opened a wide-area connectivity center in Atlanta to provide planning, implementation and a host of other services to X.25 users. IBM has a similar center in Atlanta for IBM, DEC and other

connection requirements. DG has moved away from its proprietary Xodiac net architecture and has announced its intention to support OSI and Systems Network Architecture. DEC, which already offers some SNA compatibility, is offering full migration to OSI under DECnet Phase V by 1990.

AT&T has announced new plans for an X.400 gateway, with full X.400 compatibility to follow. IBM, with architectures such as Open Communications Architecture, Systems Application Architecture and SNA, has become similarly active in wide-area network implementations. IBM officials are stressing that the local network is one of four cornerstones in its extended SNA scenario (the other three being the mainframe, mid-range system and Rolm Corp.'s Computerized Branch Exchange).

IBM has clearly de-emphasized local networks as independent systems with local connectivity. Instead, it has placed an emphasis on the Personal Computer as a system processor in a larger environment, where the local-area network is one component of a larger wide-area net.

For network managers and users considering a local-area network purchase, this major vendor emphasis on wide-area connectivity, in addition to the growing number of other connectivity choices, raises their planning stakes considerably higher than when the first local nets were introduced. However, these same factors also have the potential to increase the reproductivity and flexibility of those local-area networks that are properly planned in terms of future corporate networking needs. ■

Fleig is director of systems research at International Technology Group, a Los Altos, Calif.-based research and consulting firm specializing in the IBM market.

PBX PERFORMANCE

JOHN J. HUNTER

Attempts don't count

Many managers use incomplete or outdated criteria when selecting a private branch exchange.

Too often, a switch is judged by the number of lines and trunks supported, maximum time slots available, number of nonblocked calls permitted and busy-hour call attempts (BHCA) supported. BHCA's, in fact, are often thought to be a key measure of the PBX's call-handling capacity — but that's only partially true.

When a phone goes off-hook and the user dials a few digits and then hangs up, it's considered a BHCA even though the call wasn't completed. In that scenario, a PBX can handle a high volume of calls and have a high BHCA rating, since few PBX resources are needed to recognize an off-hook condition.

Calls invoking features such as

least-cost routing and call restriction, however, use more processing power and reduce the number of calls a PBX can handle. BHCA, therefore, isn't an accurate performance measurement, as too many variables are involved.

An accurate assessment of a PBX's call-handling capacity can be made by measuring its busy-hour call completion (BHCC) capacity. BHCCs take into account all operations needed to establish a connection and disconnection. These setup and teardown operations involve the central processor and its control software. If the processor is slow or the software inefficient, the number of call completions diminishes.

One way a PBX buyer can judge the suitability of a PBX to its operating environment is to establish a call benchmark and have each PBX vendor run calculations to determine the BHCC. Such a benchmark should reflect the fact that calls in-

volving enhanced PBX features consume more processing resources than basic calls.

For example, automatic call distribution, voice messaging, call restrictions and least-cost routing load the PBX's central processor heavily and reduce the number of calls it can handle. A heavy mix of short duration data calls will also tax the central processor since frequent call setups and teardowns are needed. Poorly designed system software also reduces BHCCs.

Full-featured telephones with services such as call waiting, speed dialing and call conferencing also demand more of the central processor. Speed dialing, for example, requires the PBX to associate called numbers with retrieval characters and store them in memory tables. When the user makes a speed call, the processor retrieves the full number and makes the connection. If call restrictions are also invoked, the central processor has to

perform that table lookup as well.

Users shouldn't assume that a PBX with a distributed architecture will handle calls more efficiently. The intent of such distribution is to relieve the central processor from having to perform all tasks, thereby increasing the speed at which tasks are completed.

While distributed control does keep some of the load off the central processor, it can impact the volume of call completions since

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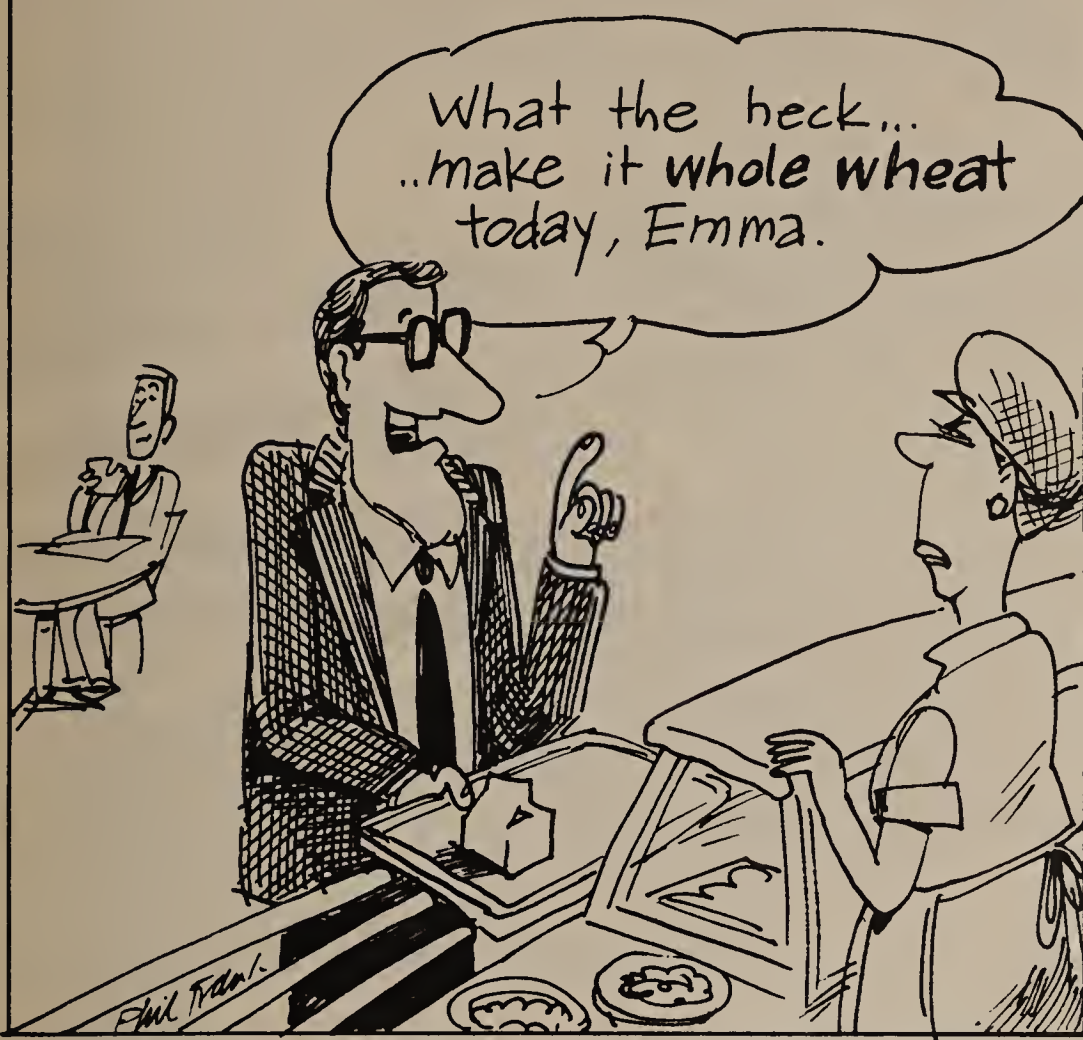
Hunter is president of TMS Corp., a telecommunications consulting firm in Devon, Pa.

Opinions

► TELETOONS — By Phil Frank

Little known facts #33

Over fifty percent of all telecommunications managers classify themselves as risk-takers.



many communications operations must be coordinated and synchronized with the central processor.

To illustrate that discrepancies exist between BHCA's and BHCC's, TMS Corp. devised a simple benchmark to measure voice and data handling. Several PBX vendors were then asked to furnish BHCC ratings for a fully configured system that would handle voice-only, data-only or full-feature phone calls. The latter included call restrictions, call conferencing and least-cost routing. The data calls used 600 call seconds each, requiring the PBX to set up and tear down calls several times per hour. The BHCCs were compared with the published BHCA ratings for the PBXs being evaluated.

AT&T, Northern Telecom, Inc. and Rolm Corp. were the only vendors providing numbers that strictly adhered to the benchmark. The AT&T System 85, a high-end PBX, has a BHCA rating of between 65,000 and 400,000, but its BHCCs are quite different. Voice-only call handling comes closest to the low-end BHCA with 60,000 BHCCs. However, with full-feature calls, the number drops to 35,000. Data

calls are lower yet, with 23,000 BHCCs claimed.

The Rolm CBX II 9000AE, also a high-end PBX, is rated at 165,000 BHCA's. Rolm claims a BHCA equaling 165,000 BHCCs for voice-only calls and says the full-feature calls outlined in the benchmark drop the BHCCs to 112,500. Data calls are even lower at 58,000 BHCCs. Northern Telecom's SL-1 XT, a medium-range PBX, has a BHCA rating of 28,000. Its voice-only BHCC capability is 26,000, placing it close to the BHCA. The full-feature calls brought the number down to 6,000 BHCCs, however. Northern Telecom didn't furnish data-call BHCCs.

Vendor-supplied numbers are always suspect since they can reflect theoretical limits. But even if that's the case with the products benchmarked, the numbers show that BHCA's shouldn't be regarded as the sole measure of PBX power. They may come close for voice-only scenarios but not for situations in which feature calls or short-duration data transmissions are concerned. Users should be sure vendor benchmarks consider real-world situations. ▢

T-1 SERVICES

ANDRES LLANA

Wanted: flexibility

AT&T opened the doors to T-1 flexibility some time ago when it announced the availability of customer-controlled reconfiguration (CCR) of leased DS1 lines.

Since then, even more flexibility has been added to T-1 links. Inbound and outbound WATS are now available on the same line. Multiplexers currently on the market make it possible to differentiate all traffic on a T-1 link. This raises the possibility of passing individual channels over a T-1 link to be switched to different destinations.

Are users likely to see more flexible utilization of T-1 links in the near future, particularly with the other common carriers already offering such flexibility in their networks?

We can certainly expect competitive offerings from AT&T in the form of a more flexible application of Megacom and perhaps the introduction of a sub-rate T-1 tariff. If either comes to pass, some users may be in for a surprise, since this new capability also implies that a user's multiplexers must be Digital Access and Cross-connect System (DACS)-compatible.

This means that output on the multiplexer's trunk side must be able to present a D4 Frame Format Pattern with Extended Super Frame (ESF), that is, digital information must be in eight-bit bytes and the 193rd bit must conform to a defined pattern.

This compatibility is important, since AT&T's DACS equipment emulates a D channel bank but doesn't convert the digital information back into an analog signal. It also maintains certain trunk conditions such as on-hook and off-hook signaling supervision.

Assuming that users have the right equipment and are CCR subscribers, it appears that they could switch DS0-level channels. They might even be able to re-map their DS1 links to derive separate channels for diverse routing while still directing the remaining channels to their distant nodes.

However, this may or may not be possible, given that some multiplexers aren't DACS-compatible on the trunk side and

are, therefore, unable to present a compatible aggregate to the network.

Users wishing to optimize the application of their T-1 links must address this issue. T-1 equipment manufacturers also must address this issue if they wish to maintain the integrity of their installed bases.

It doesn't appear that equipment manufacturers realize yet that a T-1 network need not be a private closed-loop or ring-configured point-to-point network. It's clear that carriers will become more competitive in the future and will likely offer the ability to switch channel-level traffic at the carrier's switching hub.

This market pressure will force manufacturers to rethink their design characteristics. But why should users have to wait for manufacturers to catch up to the carriers?

In a very short time, the industry has gone from multitrunk analog networks to fully integrated single-line T-1 based networks. But many users aren't positioned to take the next step, because their equipment can't support DACS-compatible channels. To overcome this, more manufacturers need to take the lead in moving their equipment from a closed network configuration to a more open-ended network philosophy.

At a minimum, simple add-on upgrades are needed that provide not only D4 Framing with ESF but DS0 channelization structured in a network-compatible aggregate. Failing this, a new firmware design should be introduced. It should be designed in an open-ended manner, enabling users to add new tariff-dictated upgrades simply by replacing older operating systems.

In addition, it should provide the ability to support subrate multiplexing when tariffs are introduced to support such service.

Further, port cards should be easy to install and provide convenient migration between environments without disrupting the network configuration.

With rapid growth in T-1 applications, opportunities for more flexible applications of networks have emerged. What's needed now is equipment that will enable users to take advantage of these opportunities. ▢

Llana is director of consulting services for the Vermont Studies Group, Inc. of West Dover, Vt.

NETWORK WORLD

Features

October 12, 1987

► *TELECOM '87*

Rendezvous in Geneva

BY MICHAEL HURWICZ

Special to Network World

The Telecom '87 show, to be held Oct. 20 to 27 in Geneva, Switzerland, will be the scene of unprecedented cooperation among traditional competitors. This is perhaps natural for a trade show sponsored by the International Telecommunication Union (ITU), a United Nations agency whose purpose is "facilitating... international cooperation, and economic and social development among peoples by means of efficient telecommunication services," according to the charter of the organization.

Held once every four years, the world's largest telecommunications trade fair this year boasts 715 exhibitors from 40 countries, spreading their wares over some 65,000 square meters at the Geneva Exhibition and Congress Centre.

Estimates of the number of visitors expected range from 50,000 to more than 200,000. This year's show, the fifth in the series, takes as its theme, "Communications Age: Networks and Services for a World of Nations."

X.400 demonstration

The most striking example of

Hurwicz is a free-lance writer based in Nashville, Tenn.

multivendor cooperation at the show is an X.400 electronic-mail demonstration by 21 vendors and government agencies from North America, Europe and Japan.

This demonstration will be the largest of its kind ever, according to Ian Valentine, technical director of Level-7 Ltd., a group of independent consultants in Berkshire, UK, that is coordinating the event.

Participants fall into two groups: private- and government-offered X.400 administrative management domains (ADMD), which provide public messaging services; and vendors that provide X.400-compatible equipment that allows customers to implement private management domains (PRMD).

In the first group are AT&T; British Telecommunications plc and its subsidiary Dialcom, Inc.; Deutsche Bundespost; Kokusai Denshin Denwa Company, Ltd. and Nippon Telephone and Telegraph Corp. (both of Japan); the Swiss Post, Telegraph and Telephone administration; Telenet Communications Corp.; and Transpac, the French packet-switched network service provider.

Vendors offering PRMDs from the U.S. are AT&T, IBM, Digital Equipment Corp., Hewlett-Packard Co. and Unisys Corp. Also represented are Danet GmbH Beratung und Software-Entwicklung and

Telecom giants
convene on
Swiss soil to
compete and
cooperate.

Nixdorf Computer Corp. from Germany, Ing. C. Olivetti & Co., S.p.A. from Italy, Philips Industries, N.V. from the Netherlands, Telic-Alcatel and Telesystemes from France, Sydney Development Corp. of Canada and Standard Telephone & Radio of Switzerland.

IBM will demonstrate a prototype of an X.400-based message-handling service that uses public X.25 networks. This software system will go to IBM's European product development labs after the show, according to Guenter Mueller, director of IBM's European Networking Center. The software has already undergone field trials in academic institutions in four European countries. The move to the product labs is the first step in creating a commercial product from a prototype. If the system does become a commercial product, it will be the first IBM Open Systems Interconnect (OSI) product to use both X.25 and X.400.

The participation of ADMDs distinguishes this demonstration from

Continued on page 32



From page 30

similar demonstrations in the past, according to John O'Brien, HP's European product manager for OSI products. Last year, all participants in an X.400 demonstration at the CeBIT fair in Hannover, West Germany, represented PRMDs, O'Brien said. According to Level-7's Valentine, linking ADMDs prepares the way for a truly global messaging service.

The next step in X.400 demonstrations, O'Brien adds, will be "body-type conversions," which allow messages to be translated from one format to another. For example, a Telex message could be received as a facsimile, or vice versa, or either one could be received by an E-mail application. Look for that at CeBIT in 1988, he says.

ISDN

Another major theme at the show is the Integrated Services Digital Networks standard. Here's a sampling of what attendees will see: AT&T and Philips Telecommunications (APT) will demonstrate ISDN on a fully operational 5ESS-PRX digital switching system. According to APT sources, the Subscriber Loop Carrier (SLC) system will also be shown. The SLC allows the integration of various communications services onto one digital or analog line for transmission.

NEC Corp. of Japan will be showcasing its ISDN-based private branch exchange, the NEAX 61. NEC plans to exhibit other ISDN-compatible equipment as well, including three low-end workstations (IST Models 200, 400 and 1000) and the NEAX 2400 IMS local-area network switching system.

Northern Telecom, Inc. will demonstrate the ISDN services provided by its DMS-100 digital multiplexer as well as a new "multimedia multipoint teleconferencing system" compatible with ISDN. This system will provide a hands-free link for the transmission of voice or images, including documents, over two 64K bit/sec digital lines. The prototype was developed by Bell Northern Research (BNR), Northern Telecom's research and development arm in Montreal.

The system runs on any system compatible with IBM's Personal Computer family. A scanner, a video camera or a personal computer graphics program can be used for input. All conference participants will be able to see and change a shared image on their respective monitors.

Standard Elektrik Lorens AG (SEL) of Stuttgart, West Germany, will install and operate a System 12 ISDN Digital Switching Exchange of the same kind it recently delivered to Deutsche Bundespost. Devices connected to the switch will include terminals, Group 4 facsimile machines, storage and retrieval systems, still picture transfer equipment and personal computers. SEL will also show an ISDN D-Channel protocol simulator, an application used for off-line

testing of ISDN exchanges and terminals.

Telenorma of Frankfurt, West Germany, will show its Integral 222/333 ISDN communications system, available in four versions for export.

Many other major U.S. and Canadian telecommunications service providers are also expected to exhibit ISDN-compatible services.

Most of the European PTTs will be represented at the exhibit, not to mention other telecom administrations from Saudi Arabia to New Zealand.

But wait, there's more

While leading-edge technologies such as X.400 and ISDN may garner much of the publicity, the

show will feature a variety of new telecom gear from around the globe. A few examples: Citifax Corp. of Northbrook, Ill., will demonstrate a number of facsimile machines and electronic writing boards. It will also announce a new facsimile machine weighing only eight pounds and capable of being used with a car phone. It is the world's smallest facsimile machine, running on a 12-volt power supply, and delivers a standard 8½ in.-by-11 in. page, according to Citifax spokeswoman Andrea Fuchs.

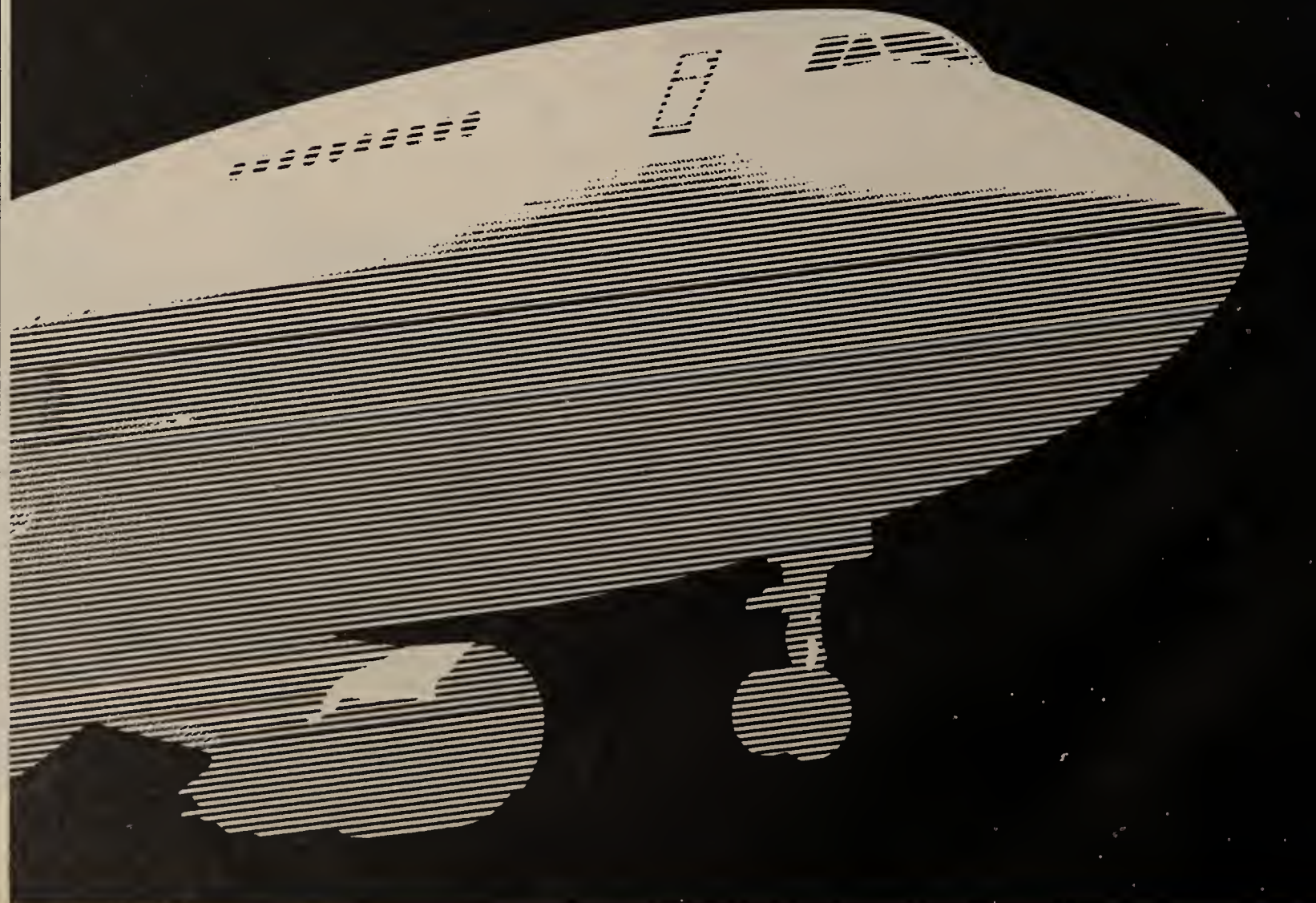
Southwestern Bell Corp. will show its Freedom Phone, a voice-activated phone with neither rotary dial nor keypad. The set recognizes voice commands and dials automatically.

Motorola, Inc. of Schaumburg, Ill., will show various types of radios, including walkie-talkies, pagers, mobile and microwave radios. Also, a telephone encryption terminal will be demonstrated. Motorola apparently will be making some announcements at the show; a press conference is scheduled.

Products to be shown by 3M Corp. include a fiber-optic distribution channel and various types of test and measurement equipment.

3M is also holding a news conference at the show, and a 3M representative will speak at the World Telecommunication Forum, which will be held at the same time as the show. The subject of the speech will be "Testing the global network automatically: yesterday, today

What our
transportation
clients will tell
you about N.E.T.TM
T1 networks:



and tomorrow."

Multimil International SA of Geneva will show its second-generation "memocard," a credit card-sized computer that can attach to any IBM-compatible personal computer using the RS-232 port.

The gang's all here

The list of Telecom '87 exhibitors reads like an international Who's Who of computer and communications vendors.

In addition, many associations will be represented, such as the U.S. Telecommunications Suppliers Association (Chicago); the Association of the German Telecommunications Industries (Frankfurt); Associazioni Nazionale Industrie Elettrotecniche Ed Elettroniche

(Rome); the Electronic Industries Association of Japan (Tokyo); the Electronic Industries Association of the U.S. (Washington, D.C.); the Finnish Foreign Trade Association (Helsinki, Finland); the Optoelectronic Industry and Technology Development Association (Tokyo); and the USSR Chamber of Commerce and Industry (Moscow).

HP goes all out

HP probably has a stronger strategic commitment to international standards than any other major American computer manufacturer ("HP bites connectivity bullet," NW, Aug. 17).

Accordingly, the company is going all out for the Telecom '87 show with a huge display, not only

on the show floor but also in HP's headquarters in Geneva, a few minutes' ride from the Geneva Exhibition and Congress Centre. In addition, many senior HP officials are showing up to give speeches and meet attendees. John Young, HP's president and chief executive officer, will be on hand and will be speaking at a forum.

HP is playing it close to the vest regarding any possible show unveilings, though one HP source in Europe says there will be important announcements. HP is sponsoring what it calls a "prestige dinner" and is also holding an hour-and-a-half press conference.

DEC's network at work

DEC will connect its booth to

9000 terminals and 600 computers around the world to show its "network at work." The company will demonstrate X.25, X.400, ISDN, Telex, PC-Interconnect, DECnet and DECconnect as part of a presentation entitled, "A day in the life of a telecommunications manager." DEC has scheduled a press conference, and company President Kenneth Olsen will speak at a forum.

Dinners and heavyweights

If dinners, press conferences and the presence of corporate heavyweights are any evidence, some other computer and communications companies that may make big announcements include:

■ AT&T. The telecommunications giant will sponsor an executive and exhibit staff dinner, an international dinner, a press conference and a performance of the Mummenschanz Mime Theater group in the Casino de Geneve. No less than James Olson, chairman of AT&T, will be on hand to give one of the kick-off speeches for the forums. He will be followed a few days later by Ian Ross, president of AT&T Bell Laboratories, who will look into the future of network evolution.

■ IBM. Big Blue will hold an invitation-only press event. Kaspar Casani, chairman of IBM Europe, and Ellen Hancock, president of IBM's Communication Products Division, will present IBM's perspectives at the forums.

■ NYNEX Corp. A prestige dinner and a press conference will be held. Delbert Staley, chairman of Nynex International, discusses the question, "Will the BOCs go international?" Rumor is that he thinks they will.

Also speaking at forums will be John Sodolski, president of the U.S. Telephone Association, Edmund B. Fitzgerald, chairman of Northern Telecom Ltd., John Clendenin, chairman and CEO of Bell-South Corp., Paul Henson, chairman of United Telecommunications, Inc., Dean Burch, director general of International Telecommunications Satellite Organization, Norio Ohga, president of Sony Corp., and An Wang, chairman of Wang Laboratories, Inc.

Equally impressive is the list of dignitaries attending from government telecommunications administrations.

The French, in particular, can only hope the third week in October doesn't bring any crises in the public network, since it appears the entire French telecommunications establishment will be in Geneva.

A number of other activities are taking place concurrently with the show. These include the "Golden Antenna '87" film festival of telecommunications-related films, the 1987 World Telecommunications and Electronics Book Fair and a Hall of Nations exhibit where, according to a brochure, ITU members not represented elsewhere at the show can put up "illustrations with facts and figures of their telecommunications situations both now and in the year 2000." □

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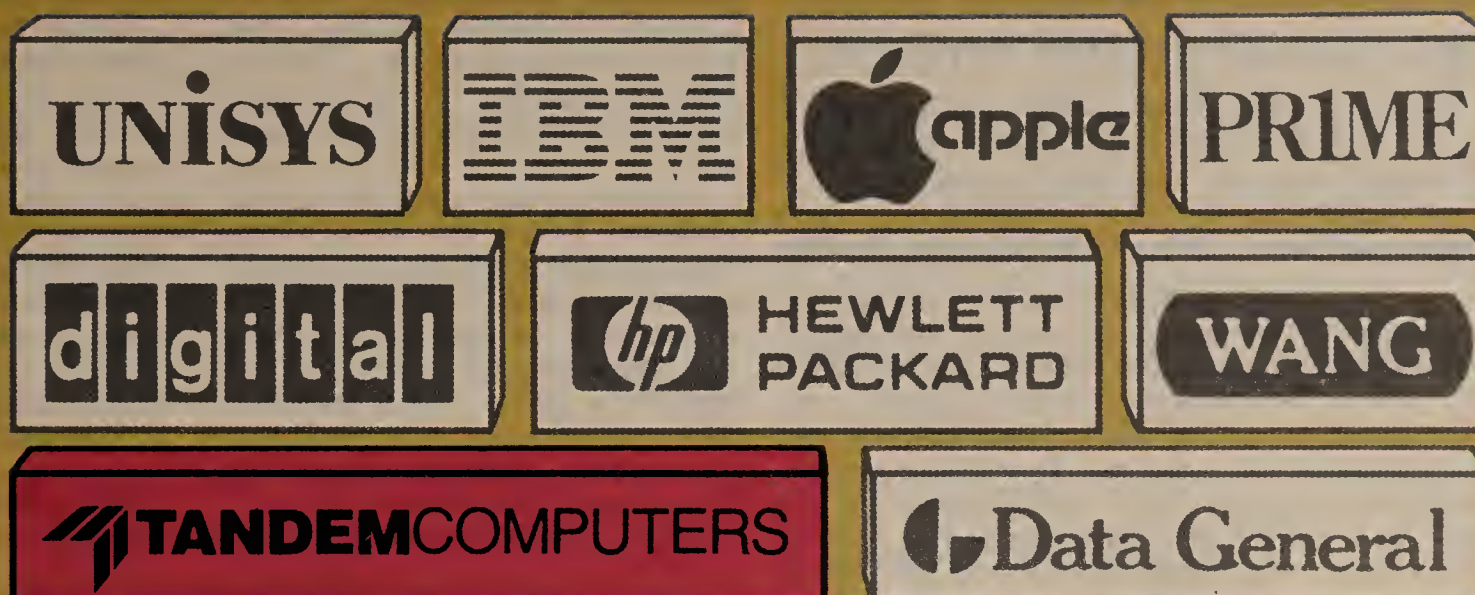
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Open Systems: How open are they?

Tandem expands its horizons

Continued from page 1

to other systems and nets.

Although Tandem is committed to providing its customers with connectivity to processors from other vendors, as well as to different standards-based networking schemes (see Chart 1 on Page 36), the company definitely does not intend to replace its proprietary networking system, Expand, with a standards-based architecture. Tandem views Expand as an essential extension of the Guardian message-based operating system for its line of NonStop parallel processors (see Figure 1 on Page 37).

"Tandem's intersystem net-

working architecture is closed and proprietary, but, since we own both ends of the communication, that's OK," says Roger Mathews, Tandem's manager of networking software product management.

"We've integrated that intersystem communications with our operating system, which is a parallel processing architecture that involves multiple processors in the same system," Mathews says. "That's the key to our main benefits — fault tolerance and modular expandability.

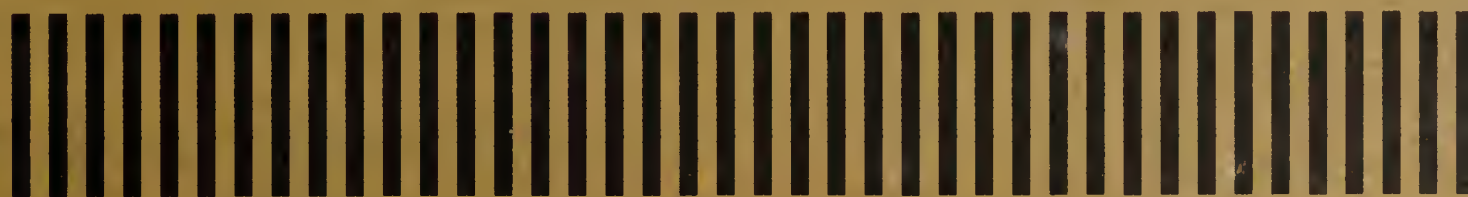
"We use Expand intersystem networking so that a program in a processor in one Tandem system can access programs or data in another system across the network in

exactly the same way. That's why people buy us — because we've integrated our intersystem communications with our basic system process," he explains.

At the same time, however, Tandem recognized that its processors had to connect to a wide variety of terminal devices from different vendors, and it developed a downstream communications architecture that allows its processors to capture transactions from different device types.

This requirement in the on-line transaction processing environment is what is driving Tandem's increasing support of networking standards, including

Continued on next page



“We see these architectures [OSI and SNA] coming to dominate the market for corporate business communications through the end of the century,” says Andrew Poupart, Tandem’s OSI products manager.

From previous page
the International Standards Organization’s (ISO) Open Systems Interconnect (OSI) protocols. “There are two kinds of capabilities in the network, and in one area we have always used standards and never used our own proprietary standard,” Mathews says. “That area is in communications outward from Tandem to the devices that provide the transactions that come into the system.”

The two primary standards Tandem supports are IBM’s Systems Network Architecture networking protocols and the CCITT/ISO X.25 standard. “Tandem’s position is that there are two strategic networking architectures: OSI, for multivendor networking, and SNA,” says Andrew Poupart, Tandem’s OSI products manager. “We see these architectures coming to dominate the market for corporate business communications through the end of the century.”

Connecting to IBM

Of the two architectures, Tandem’s product implementation of SNA protocols is more extensive — a strategy driven by today’s mar-

ket requirements. Mathews says, “We put a tremendous amount of development effort into the SNA environment because there is a tremendous marketplace of SNA systems out there. The OSI area, within five to 10 years, will be on par with SNA in terms of the customer’s implementation of that set of standards. In that time frame, we need to be absolutely positioned with a well-proven OSI product set. But we have, more than many other vendors, devoted resources to the SNA marketplace, because that’s where the bucks are today and in the near future.”

Mike Braude, a corporate vice-president at market research firm Gartner Group, Inc. in Stamford, Conn., calls Tandem’s SNA connectivity claim a bit modest. “Tandem has the best connectivity to IBM outside of IBM,” he says. “The only requirement that they haven’t met yet is for cooperative processing between their machines and IBM’s.”

Mathews attributes Tandem’s extensive implementation of SNA protocols to its need to connect to a wide range of IBM SNA intelligent controllers used by industries such

as banking and retail. Others at Tandem, such as Dennis McEvoy, vice-president of software, attribute the company’s extensive SNA support to the priorities of Tandem customers, who have asked for IBM links even before they wanted Tandem-to-Tandem links. “Our first communications product, which came out in 1977, implemented an IBM [BSC] access method.”

Current SNA connectivity is provided under the SNA Access Services Software (SNAX) product umbrella, which in itself is an access method similar to IBM’s Virtual Telecommunications Access Method in SNA. SNAX was first delivered in 1983 and now supports SNA communications for more than 400 customers.

SNAX allows SNA devices to be

configured on Tandem systems and allows applications in an SNA network to communicate with applications in Expand networks. The physical connection is provided via SNA/Synchronous Data Link Control lines.

Higher level software products in the SNAX family include SNAX/High Level Services (HLS), which provides a high-level application program interface for LU 0, 2, 3 and 4. “HLS interfaces to procedures that let you build applications without having to worry about lower layer protocols,” explains Tandem user Robin Dennell, software manager for the Mediat insurance network project at British Telecommunications plc in London.

The Mediat network allows agents using personal computers

Multivendor connectivity provided by
third-party vendors
Chart 2

Alliance Systems, Inc., Oak Brook, Ill.

- Hyperlink Application Level Interface — Interfaces Tandem Pathway applications with Network Systems Corp.’s Hyperchannel.

Automation Design, Inc., Chicago

- Business/Link — menu access from Tandem to multiple systems/networks via X.25.

Data Architects, Inc., Waltham, Mass.

- Mpress — links Tandem systems to assortment of other computers using Systems Network Architecture, X.25, Binary Synchronous Communications and Hyperchannel.

DB/Access, Inc., Cupertino, Calif.

- Enhansys — provides data access between Tandem and other systems, including IBM, Digital Equipment Corp., Hewlett-Packard Co. and others. Data base Interfaces include dBASE II, SQL/DS1 and others.

ETI, Inc., Montreal

- ETINET — permits high-speed file transfer between Tandem and IBM, and the switching of inquiry or update transactions from Tandem to IMS, CISC and IDMS environments and vice versa.

Failsafe Computer Systems, Inc., Des Plaines, Ill.

- Failsafe AHP — provides a gateway from Tandem to other networks and applications via X.25 or SNA.

Gemini Communications, Inc., Hinsdale, Ill.

- AMDHCF — connects 3270 series terminals from an IBM host to Tandem application programs.

Menlo Business Systems, Inc., Los Altos, Calif.

- A variety of products connecting Tandem and Apple Computer, Inc. Macintosh workstations, including Mac Menlo, which supports block-mode file-transfer applications for Apple Macintoshes in the Tandem environment.

Nomura Computer Systems, Tokyo

- Sens — includes Tandem-based software products to control interfaces to outside devices via BSC, X.25, asynchronous, Japan Bankers Association’s Zengin protocol, Japan Chain Store Association’s JCA protocol and Hitachi, Ltd.’s Hitachi Network Architecture.

PSR Systems, Inc., Schaumburg, Ill.

- Transnet — provides message switching between Tandem and other host applications.

Quality Systems Associates, Inc., Doylestown, Pa.

- Q/LINK — allows any Tandem mail system to interface off-system via Western Union Corp.’s Easylink to send Telex, TWX, mailgram, cablegram, telegram and Easylink messages and to access mail systems such as IBM’s Professional Office System, DEC’s All-in-1 and Wang Laboratories, Inc.’s Wang Office.

Signorum, Inc., Fremont, Calif.

- Storelink — links in-store point of sale NCR Corp. 751’s with Tandem applications.

Software Sciences Ltd., Farnborough, Hampshire, England

- DECnet Interface — interface between Tandem networks and DECnet networks.

Systems Designers plc, Fleet, Hampshire, England

- ADS-365 — provides interfaces from Tandem to multiple system networks, Telex, facsimile, gateway systems to electronic mail, X-400, videotex and Electronic Data Interchange.

Taft Consulting Corp., New York

- TClInk — complete message-switching system linking Tandem systems to Telex, TWX, Direct Distance Dialing and others via X.25 facilities.

Voeist Alpine A.G., Linz, Austria

- Vacoms — a software communications system that interconnects computers and networks using various lower level protocols, such as DEC’s DECnet, HP’s DSN/DS and X.25.

Zintech Corp., Fairfax, Va.

- MSPF — allows session switching between Tandem systems and other mainframes including software systems on disparate vendor mainframes, including Tandem, IBM, Burroughs Corp., DEC, Univac and Honeywell, Inc.

SOURCE: TANDEM COMPUTERS, INC., CUPERTINO, CALIF.

Multivendor connectivity provided by
Tandem Computers, Inc.
Chart 1

Data General Corp., Westborough, Mass.

- Exchange — Remote job entry (RJE) 2780/3780 emulation and file transfer

Digital Equipment Corp., Maynard, Mass.

- X.25AM — X.25 for program-to-program communications
- OSI4AM — OSI session-layer transport over X.25
- Exchange — RJE 2780/3780 emulation and file transfer
- ATP6100 — VT100 terminal support

Hewlett-Packard Co., Palo Alto, Calif.

- Exchange — RJE 2780/3780 emulation and file transfer

Honeywell, Inc., Minneapolis

- Exchange — RJE 2780/3780 emulation and file transfer
- OSI4AM — OSI session-layer transport over X.25
- VIP7700 — Visual Information Projection terminal support
- BSC Point-to-Point — Binary Synchronous Communications point-to-point Interface
- Tandem Hyper Link — Hyperchannel data-link interface

IBM, Armonk, N.Y.

- SNA Access Services Software/Extended Facility (SNAX/XF), SNAX/Advanced Program Communications (APC) — Tandem application to CICS application (SNA LU 6.2); IBM System/38, System/36, (SNA LU 6.2, LU 2)
- SNAX/XF, SNAX/High Level Services (HLS) — Tandem application to CICS or IMS application (SNA LU 0); IBM SNA controllers (IBM 3600, 4700, 8100, S/1, 3650, 3660)
- SNAX/XF — SNA 3270 terminals attached to Tandem Systems
- EM3270 — Tandem 6530 terminals emulating 3270 devices
- Exchange — RJE (BSC 2780/3780, HASP, SNA)
- TR3271 — IBM host BSC connection
- AM3270 — 3270 BSC terminals attached to Tandem Systems
- AM3270, TR3271 — BSC terminal pass-through to IBM host applications
- SNAXlink — High-speed channel connection for SNA
- Tandem Hyper Link — High-speed connection for Hyperchannel

NCR Corp., St. Paul, Minn.

- Exchange — RJE 2780/3780 emulation and file transfer

Siemens Information Systems, Inc., Boca Raton, Fla.

- Exchange — RJE 2780/3780 emulation and file transfer

OSI = Open Systems Interconnect
SNA = Systems Network Architecture

SOURCE: TANDEM COMPUTERS, INC., CUPERTINO, CALIF.

equipped with terminal-emulation software to access information in an IBM 8100 over X.25 public data networks (PDN). The Tandem TXP processor strips off the SNA protocols coming from the 8100 and sends a 3270 data stream over the X.25 connection. "All of this is invisible to the agents," Dennell says.

Tandem also supports IBM's LU 6.2 peer-to-peer protocol in its SNAX/Advanced Program Communications (APC), which provides an LU 6.2 application program interface. This program does not implement the PU 2.1 protocol, which would add the ability to manage conversations over multiple parallel sessions.

According to Mathews, Tandem decided not to include PU 2.1 support initially in the software because SNAX already had downstream connectivity, thanks to its LU 0 implementation, and because Tandem wanted to allow its customers to begin developing peer-to-peer applications, rather than wait

plementation as an interface between our PS Mail system for the Expand networking facility and IBM's DISOSS," Mathews says.

PC connections

Much to the surprise of some industry observers, Tandem has also trained its connectivity sights on IBM's family of personal computers as well as the networking protocols intended to allow personal computer applications to communicate.

"Two years ago, I read an article that said the one area where PCs will never really be important is in on-line transaction processing. We absolutely disagree," says Jeri Edwards, Tandem's manager of information management technology products. "We believe in the utilization of the resources that are in the company. The ability of the PC to create an end-user environment that is far more friendly, productive and efficient than a terminal environment is key, we believe, in on-line transaction processing."

Tandem also supports IBM's LU 6.2 peer-to-peer protocol in its SNAX/Advanced Program Communications (APC), which provides an LU 6.2 application program interface.

for a full implementation.

Other SNAX software includes Exchange, a remote batch emulation system that allows Tandem systems to operate as remote job entry terminals in an IBM Job Entry System.

At the application level, Tandem offers a bevy of software products dubbed Wordlink, which support IBM's Document Content Architecture (DCA). Tandem's Transfer information delivery software and PS Mail electronic mail products include document translation technology licensed from Soft-Switch, Inc., allowing users with different word processing systems connected to Tandem processors to send revisable-form documents to each other.

On the hardware side, Tandem recently introduced a communications subsystem that provides a direct, high-speed channel attachment between SNA hosts and Tandem systems. Because the link, dubbed SNAXLink, uses standard SNA interfaces, applications don't have to be modified to use the link. Frank Gens, International Data Corp.'s (IDC) vice-president of technology assessment, says he believes that is one of Tandem's strengths. "You don't want the users to have to do any programming to make the communications link. That's where Tandem's done a good job."

Future support for SNA advanced architectures is expected for SNA Distribution Services. "We're working on a gateway im-

Multilan family also includes software that allows Tandem processors to be used as fault-tolerant file servers for personal computers, which can access files using DOS commands.

Multilan user Chip Fox, director of operations planning with Telac-tion Corp. in Schaumburg, Ill., hopes to make use of Tandem's file

which has been available for more than a year and has a small but committed number of users.

"People say our record is spotty toward open systems, but we've not been all that aggressive in promoting our open systems products. However, we were the second vendor to certify with Telenet Communications Corp. in 1979 for our

On the hardware side, Tandem recently introduced a communications subsystem that provides a direct, high-speed channel attachment between SNA hosts and Tandem systems.

server software, although he originally opted to use personal computer-based networking software. "We're pleased enough with Multilan to use it beyond our original plan," Fox says. "It's doing everything that it's supposed to do."

Toward OSI

IDC's Gens says he believes Tandem's strategy of providing extensive IBM connectivity now is a pragmatic one. "Why invest a lot of money and resources into a standard that no one's buying today," he asks. Following that pragmatic bent, however, should soon lead Tandem to shift its emphasis to OSI support, which currently exists only in lower layer products. "We expect 1988 to be a very important year for OSI and for Tandem in OSI development," Tandem's Poupart says.

Existing OSI offerings include X.25 networking products, which have been available since 1979, and an implementation of the OSI transport layer specification,

X.25 networking, which is our most widely distributed communications product next to Expand," Poupart points out.

Tandem's X.25 product, dubbed X.25AM, is now an implementation of the 1980 version of the standard that provides process-to-process communications across an X.25 packet-switched network. Because the 1980 version doesn't completely conform to the OSI network service standard specified by the OSI Transport Protocol, Tandem implemented interim procedures to meet Transport requirements.

Despite the limitations of a 1980 implementation, Fred Lauber, manager of telecommunications system engineering at the On-line Computer Library Center in Dublin, Ohio, says he believes Tandem's implementation is the "best we've seen on a larger system." Compared with implementations from IBM and Convergent Technologies, Inc., Tandem's X.25 product is "easier to work with, handles higher throughput, has the capacity for a significant number of virtual circuits and is easy to configure," he says.

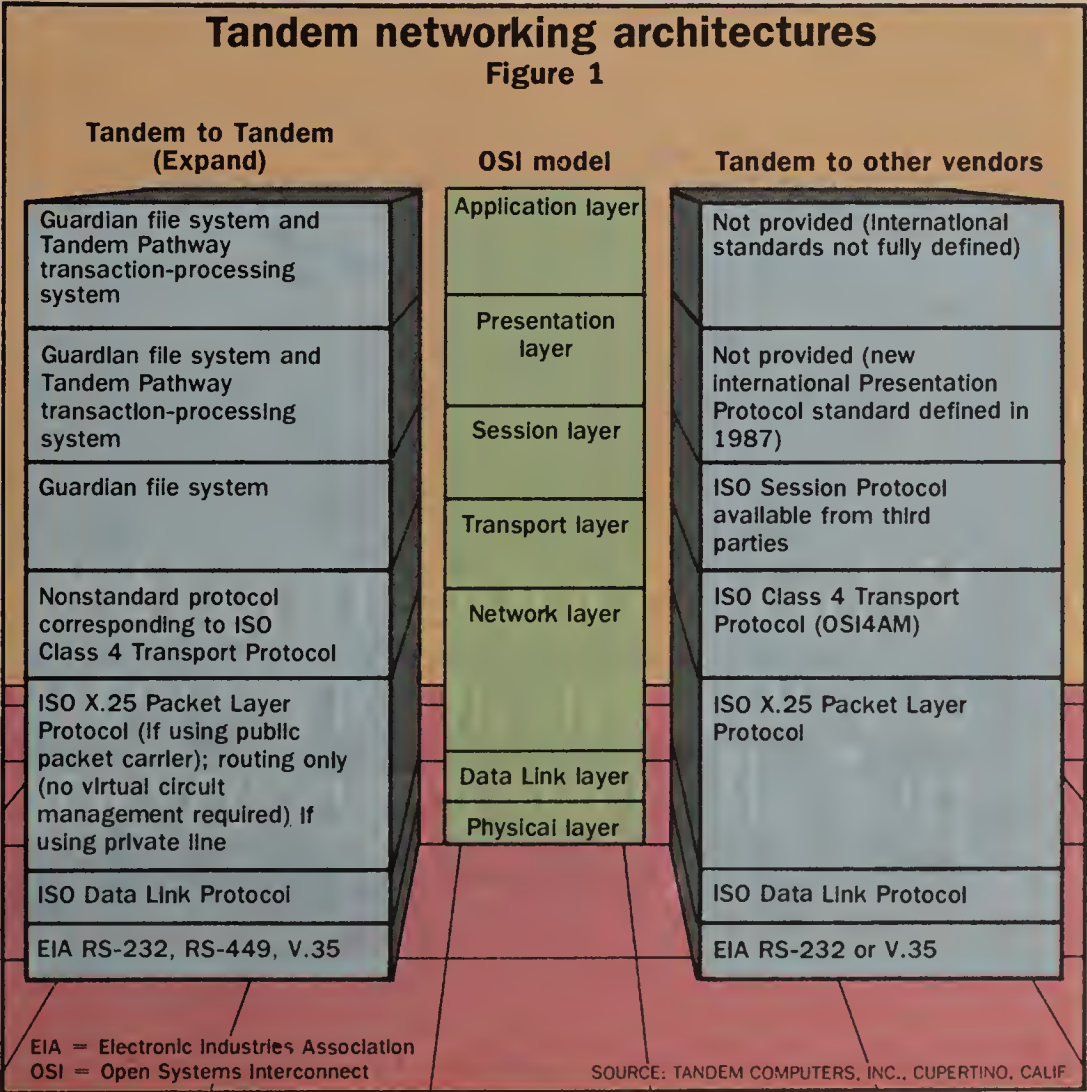
Lauber says he has interfaced Tandem systems to four different X.25 wide-area networks with little trouble on the Tandem side. Those networks included offerings from Tymnet/McDonnell Douglas Network Systems Co., Telenet, CompuServe, Inc. and PSS, a PDN in the UK.

Tandem plans to upgrade to the 1984 version of the X.25 standard in stages, beginning early next year with the extended addressing feature added to the standard. Poupart says Tandem intends to implement most of the extensions added into the 1984 revision.

Lauber says he is also currently testing Tandem's OSI4AM Transport Protocol implementation for commercial interoperability but says it is too soon to comment on test results. This implementation is bundled with the X.25AM product in one I/O process.

Although it's not yet commercially available, Lauber also has Tandem's OSI session layer protocol implementation in-house, but

Continued on next page



From previous page
he has not run the software yet.

Tandem opted to implement four of the five classes of service in the transport protocol, which defines how to provide reliable, end-to-end data delivery across different sub-networks. The four classes — 1, 2, 3 and 4 — are for wide-area networks, while the fifth class is designed for local nets. An implementation of the local-area network capabilities of the transport layer should be available in early 1988. "Part of our future product plan is to allow our Expand intersystems networking to run over other physical networks such as Ethernet," Mathews says.

In addition to supporting Ethernet — or, rather, the IEEE 802.3 standard — Tandem will also allow its OSI4AM product to operate over IEEE 802.4 networks, intended primarily for factory environments. In allowing its transport product to operate over local net standards, Tandem will "decouple" the product from X.25AM, according to Poupart.

The session layer product referred to by Lauber will likely include support for the X.400 messaging standard. "We feel X.400 will be a major market. We'll be very aggressive there," Poupart says. Currently, X.400 support in Tandem systems is provided by vendors that are a part of Tandem's Alliance program for third-party Tandem developers. The

Tandem will offer TCP/IP support in the next 12 to 18 months.

X.400 products include Sydney Development Corp.'s Messenger 400 and Telenet's Telemail 400.

Tandem, which purposely avoided implementing a Manufacturing Automation Protocol 2.1 product set, will also support MAP 3.0. "We watched the marketplace for MAP and saw lots of hyperbole and unrealistic expectations," Poupart explains. "Now there's no demand for the expensive products others developed and rushed to market. MAP 3.0 is the preferred version. We've kept tabs on it to meet the early part of the market window."

Tandem is working on support for other standards, including Transmission Control Protocol/Internet Protocol, which will be supported in the next 12 to 18 months.

"We will have a number of options at the application layer building on an implementation architecture developed for Tandem systems that gives customers the ability to mix and match products at various layers," Poupart says.

Tandem's Alliance program, which was designed to encourage third-party application developers to create on-line transaction processing applications, is also focused on the "application layer." Although the program emphasizes

Tandem's Alliance program, which was designed to encourage third-party application developers to create on-line transaction processing applications, is also focused on the "application layer."

on-line transaction processing applications, it has also yielded a number of third-party communications programs that provide access from the Tandem environment to other vendors' systems (see Chart

2 on Page 36). Such links include an Easylink Gateway, a gateway to IBM's Professional Office System (PROFS) and products that connect Tandem to Apple Computer, Inc.'s Macintosh. Tandem licenses soft-

ware code to third-party vendors that implement Tandem-developed protocols.

Another aspect of Tandem's open systems connectivity strategy is its involvement in standards-making and standards-supporting bodies. Many Tandem employees are currently working on standards committees in ANSI, ISO, Consultative Committee on International Telephony and Telegraphy, Corporation for Open Systems (COS), the National Bureau of Standards, the European Computer Manufacturers Association, the MAP/TOP Users Group and a TCP/IP committee.

That Tandem was one of COS' founding members attests to the firm's OSI commitment. In addi-



When connecting different communications systems, it's best to put all your eggs in one basket.

tion, a Tandem vice-president, Tom Chun, was the first chair on the board of directors for COS. "Tandem's reason for being a COS member is the development of OSI testing capabilities. We fully expect customers will require conformance testing for interoperability. Tandem has already done bilateral testing with some competitors," Poupart says.

"The product set we're going to build in the OSI area is going to be a very complete and modular implementation," Mathews says. "It's going to take us longer to build it that way, but we will very quickly be able to address a tremendous range of OSI connectivity options needed to bring transactions to Tandem." ■

Letters:

Editor:

Regarding David Sulser's column, "Users need ISDN now," (NW, Aug. 31) the current Integrated Services Digital Network specifications cover access to digital backbone networks: They contain last-mile answers for users. Sulser is right, as far as he goes. However, the access interface has more capabilities than he implies.

The main commodity available from backbone networks right now is 64K bit/sec pipes. Therefore, it's proper that the ISDN in-

terface be tailored to these pipes. The B channel signaling that is initiated at the interface and carried alongside all of the 64K bit/sec pipes labels the contents of each pipe. Both the carriers and the users are told what information is being put inside the pipes and what operations may or may not be performed on that information. Examples include:

- Unrestricted digital information. ("Backbone, don't mess with these bits.")
- Speech. ("Backbone, if you have the capability of converting

this pulse code modulated [PCM] signal to 32K bit/sec and can save me money, go right ahead.")

■ 3.1 kHz audio. ("Backbone, this is a PCM-coded modem or facsimile signal that can be converted to analog if necessary, but don't pull any bit-saving, speech-coding tricks.")

■ 7 kHz audio. ("Backbone, I'm a feature phone that uses 64K bit/sec adaptive differential PCM to allow high-fidelity conversations — if that end terminal can't handle 7 kHz, I'll drop back to a mere 3.1 kHz 64K bit/sec PCM.")

Other signaling messages can set up wideband circuit-switched or packet-switched connections — and most of the current discussion of 120M bit/sec ISDN access focuses on fast packet-switched connections. In this 2B + Fat D-arrangement, the current 16K bit/sec D channel expands to use most of the bandwidth available (that is, 120M bit/sec minus the two 64K bit/sec B channels).

The bottom line is that the current ISDN specifications, as an access technique, are ideal for the current network.

In addition, they contain within their signaling formats the capability to accommodate future network offerings.

Walt Roehr
Executive director
Telecommunication
Networks Consulting
Reston, Va.

Editor:

This is a response to Cecilia Lenk's letter (NW, Sept. 21) regarding my column (NW, Aug. 24). First, let me say I agree with Lenk: Educational users of enhanced services would be negatively impacted by the proposed access fee for enhanced services.

Unfortunately, there are severe financial constraints placed upon our educational institutions, and those restrictions compromise the education students receive. I hope these financial restrictions would not impact the ability of students and faculty to learn how to research information, much less obtain information.

My comments, however, addressed the overall impact of the proposed ruling on users. I hope they were not interpreted as being in agreement with the ruling, for that was not my intent.

Robert S. Brady
Vice-president
Quantum Group
International, Inc.
New York

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They should be addressed to Editor, Network World, 375 Cochituate Road, Box 9171, Framingham, Mass. 01701.

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Phoenix fees called usurious

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thousand dollars in fees.

"My opinion is that these fees are based on arbitrary numbers," said Bonney, vice-president of regulatory affairs for TCA's Arizona chapter. Bonney and Holcomb both said they believe the city patterned its fee structure on line rates charged by Mountain Bell.

"The city thinks we're being carriers on the side," Bonney noted. "They think we're avoiding paying taxes by using the right-of-way, but we're simply conducting everyday business," he added.

TCA directors offer support

Members of the Arizona chapter of TCA met once with city officials in mid-summer to discuss the new fee structure and say they hope to meet with officials again soon to work out the fee structure. At the association's recent annual conference, the chapter received the support of the TCA board of directors to negotiate with the city with the full support of the association.

According to the existing ordinance, the city is required to set fees for the revocable right-of-way

permit based on the benefits derived. This has put the city in the position of looking at its own costs and of determining how each company uses the communications lines that cross rights-of-way.

Administrative expenses cited

"We've had nominal fees that don't even start to pay for our paperwork. Just the processing of these permits is several hundred dollars," Saldamando said. And the increasing uses for communications since deregulation have created new problems for city officials trying to control rights-of-way, he said.

One question that arises is who keeps track of where the telecommunications lines are so they can be marked when work on public roads or other lands needs to be done, he said. Another is liability. "When somebody accidentally rips up somebody's telecommunications line, who's at fault?" he asks. "These new users that deregulation spawned could care less about that," he said.

Saldamando noted that the city extends a standing invitation to TCA and other groups to provide input on how the fees should be structured. □

Users approve VINES 3.0

continued from page 2

The security enhancements in VINES 3.0 were embodied in VAN-Guard, a feature announced earlier this year at the PC Expo trade show in New York ("Banyan to debut VINES security enhancements," NW, Aug. 31). VANGuard adds the ability to detect unauthorized logon attempts, prevent unauthorized access to network traffic by monitoring equipment and limit communications between two merged networks to electronic mail exchange.

"We're very concerned about security and they seemed to have addressed most of our concerns," said Anthony Cherwinski, senior systems analyst with Metropolitan Life Insurance Co. "But we have to reserve judgment until we see it."

Banyan's new TCP/IP options include the ability to support server-to-server communications and to turn a Banyan server into a nondedicated Internet Protocol router. This would allow a Banyan server on the same network as several heterogeneous systems to route traffic between the systems. For example, a Sun Microsystems, Inc. workstation and VAX mini-computer could exchange files through a Banyan server. Similarly, a Personal Computer user could download VAX files to the VINES file service.

The server-to-server version allows remote Banyan servers to be connected over a TCP/IP backbone network. Anand Jagannathan, vice-president of business development, sees a trend in companies standardizing on one protocol for use on a backbone network, which the routing capability is designed to address. Banyan also plans in a later release to interface TCP/IP

into VINES' Streetalk naming service, which would make the protocol transparent to users.

Other enhancements were made to system administration and management, including the ability of Streetalk to move groups of users from one server to another through the backup and restore facility.

Users said they were also pleased with enhancements to the Banyan Mail option. "The mail enhancements were welcome improvements," said Tim Hoag, marketing systems coordinator for Rockwell International Corp.

Banyan said it has also:

- Enhanced its Systems Network Architecture communications option to support up to four simultaneous host sessions and a hot key that enables users to switch between 3270 and DOS applications.
- Improved performance of small file transfers by 66% to improve the speed at which data base transactions are completed.
- Added new software options that support the ability to attach network printers to workstations anywhere on the network, eliminating the need to attach shared printers to the network server.
- Introduced software options to support Western Digital Corp.'s high-performance Starlan adapter and Micom-Interlan, Inc.'s high-performance Ethernet adapter.

Banyan intends to demonstrate a version of its VINES network operating system running on a Digital Equipment Corp. VAX minicomputer at Novell's NetWorld '87 trade show next week in Dallas.

Release 3.0 will be available by the end of the year. Pricing has not yet been established. □

Cincom talks Net/Master

continued from page 15

not made yet.

US West [Network Systems, Inc.] has a nice graphics package that currently works with NetView. If that product is successful, I believe the company will develop a version for Net/Master. US West developed its product with other Cincom tools, and porting the product to Net/Master wouldn't require a substantial effort.

Do you have plans to incorporate performance monitoring into Net/Master?

Currently, we have an agreement with Avant-Garde [Computing, Inc.] to study how our products can work together. We're talking about two Avant-Garde products, NetCommand and NetAlert.

NetCommand looks to us like a service point, much like NetView/PC, and we could easily support it. NetAlert does a nice job of measuring network performance as well as graphically depicting it. We're studying our options and we will make announcements involving Avant-Garde.

But we don't see Avant-Garde as the only place we will go for performance information. We've told our customers we will include a performance monitoring function in Net/Master and are moving along that path.

Will you incorporate performance information directly into Net/Master?

I don't see us developing a gateway to a product like IBM's Network Performance Monitor. We will build a Net/Master component that will be functionally equivalent to NPM.

How important is NetView/PC to your customers?

Our customers think it is important for us to support NetView/PC. Some see the product in their future, and one company is currently building a NetView/PC implementation to manage its voice network.

Can Net/Master currently work with NetView/PC?

Our product maps closely to IBM's network management philosophy. Net/Master is a different implementation of IBM's NetView and performs the same functions. Our customers can buy NetView/PC, and Net/Master will receive the data NetView would receive. We do not have to come out with a NetView/PC-like product for Net/Master.

Does Cincom plan to port Net/Master to other types of hardware?

More and more customer networks support different systems. We don't think NetView/PC is intended to tie those systems to NetView. We think it is intended to link multiplexers and telephone systems to NetView.

We will not sit for the rest of the century with our software running only on IBM hardware and IBM op-

erating systems. We want to implement our software on other boxes and with other third parties. We see that process as a major way of differentiating our product from NetView.

When do you think expert system capabilities will be available for network management systems?

It isn't clear when expert system products will become widely available. We see expert systems as a requirement and think they will be applied to managing computer systems, operating subsystems and the network. We question whether an expert system will be microcomputer-based or host-based. That's not a decision we have to make right now.

An expert system is not a magic item that will suddenly appear one day. There is an evolutionary process. A supplier has to create building blocks that lead to an expert system, and customers have to learn how to use those building blocks.

For example, an expert system should be able to take error information and make a decision based on the information. The actions should mirror what an operator would do if he saw the error message.

Currently, Net/Master customers can write code that automates the procedure followed with a certain error message. If customers have no written procedures to follow when a certain message occurs, they can't automate the procedure with our tools or anyone else's tools.

Will Cincom develop its own expert system?

I don't know whether Cincom will develop its own system, adapt a third-party system or form an alliance with another vendor when an expert system becomes available. All those options are available to us.

Are your customers using Net/Master to integrate voice and data network management?

We would like to see everyone buy Net/Master and control all their network products with it. The first step in integrating voice and data is moving both disciplines into the same organization so they can work from the same budgeting processes and can cut costs by sharing items like T-1 lines. A number of companies are moving in this direction.

But, realistically, we understand that some users prefer to control the voice network with one terminal and the data network with another terminal. If a company has a couple of T-1 lines, then I'm not sure if it really matters whether voice and data network management is integrated. When a company has 50 or 60 sites, integration supplies some economic benefits, and some large companies are trying to cut costs by integrating the two functions. □

Insurer reaches out to agents

continued from page 1

tune, N.J., allowing the agents to obtain policy and claims information on-line.

The Continental plan is aimed at securing the loyalty of independent insurance agents, who are free to sell other companies' policies. Glen Tippy, vice-president of systems for Continental's Agency Group, which is overseeing the program, said the insurance carrier is betting that by making it easier for agents to communicate with Continental the agents will sell Continental policies rather than a competitor's.

Without the Continental-supplied equipment, agents rely on paper forms and telephone calls for communications with the insurance company, according to Tippy.

The program to network agents — dubbed Time Machine Plus — is, according to Tippy, "a win-win situation for us and the agents.

That is what we want. If our competitors can't keep up, tough luck."

Tippy did not indicate how much additional business Time Machine Plus has brought Continental. But he said the company looks upon its \$100 million outlay as a good long-term investment.

Continental offers personal, homeowners', automobile and commercial lines of insurance.

Through Time Machine Plus, agents can make on-line inquiries regarding the status of clients' insurance policies and claims payments. Such tasks as recording new policies and transmitting copies of policies is done overnight in batch sessions.

Access to Continental's computer facility is over 2,400 bit/sec dial-up lines. Continental has run pilot programs linking the agents to the host computer via dedicated lines, but dial-up transmission has proved more cost-effective, according to a Continental spokeswoman.

The company chose its 1,300 most productive agents to partici-

pate in the program. Although they number less than half of the independent agents who sell Continental insurance, they produced over 70% (\$1.6 billion) of the company's 1986 agent premiums.

The System/36 can only be used to draft Continental insurance policies. "It contains proprietary software," Tippy said. "We retain ownership of the system. Even the wiring is ours. So the day they stop doing business with us we pull it out."

The company has also implemented a mainframe-based expert system to help agents in underwriting personal insurance policies. A more complex expert system to help in underwriting commercial policies is planned for the future, Tippy said.

Continental is also connected to 15 independent agents on a trial basis via an industry network operated by the Insurance Value Added Network Service Corp. (IVANS). But, Tippy conceded, the IVANS net does not provide a com-

petitive advantage for his company since many of its rivals participate in the venture.

Continental has a subsidiary called Insurennet, Inc. that sells equipment and non-company-specific software designed to help agents automate their offices. Information about Continental's personal insurance lines can be downloaded from the mainframes, via System/36s, into the agents' office systems. Tippy compared Continental's Time Machine Plus program to the networking efforts of American Airlines, Inc. and United Air Lines, Inc.

"The insurance carriers are very worried about this," said Tippy. "It is very much like the travel industry. You have the Apollo reservation system for United Air Lines, and Sabre for American Airlines. The other airlines worry about what kind of influence Apollo and Sabre have on their reservations. That situation is in the back of everyone's mind in the insurance business." □

Congress ponders equipment levy

continued from page 1

congressional sources revealed last week.

A coalition of communications users, equipment manufacturers and carriers has already been formed to fight the proposal, which, if enacted, would apply a 10% purchase tax on equipment such as private branch exchanges, packet switches, packet assembler/disassemblers, satellite earth stations, modems and microwave transceivers.

The tax is one of many being considered to help generate \$19 billion in government revenue for 1988, according to a staff economist on the Joint Committee on Taxation, who asked not to be identified.

The coalition formed to fight the proposal, led by IBM, recently sent a letter opposing the tax to Rep. Daniel Rostenkowski (D-Ill.), chairman of both the House Ways and Means Committee and the Joint Committee on Taxation.

The coalition includes the International Communications Association, the Computer Software and Services Industry Association, the Association of Data Processing Service Organizations, the Electronic Industries Association, the Computer and Business Equipment Manufacturers Association, the U.S. Telecommunications Suppliers Association, the Satellite Broadcasting and Communications Association, the Electronic Mail Association and the Videotex Industry Association.

The coalition argued that the tax would discourage future development of new communications technologies and could negatively affect the U.S. international trade position.

The coalition also said the proposal "conflicts with U.S. telecommunications policy by creating artificial costs."

Bernard Weinstein, vice-president for information systems and

telecommunications at E.F. Hutton & Co., Inc. in New York, said the tax could have a devastating impact on the communications-intensive securities industry. "Our private-line networks are our lifeblood, and any tax on equipment would have a substantial and detrimental effect on our business. The proposal seems to be motivated by the political reality that it is more palatable to tax large corporate communications users than residential customers," Weinstein said.

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Hank Levine, a partner in the Washington, D.C. law firm Morrison & Foerster and telecommunications counsel for MasterCard International, Inc. and Visa USA, Inc., said, "The equipment excise tax is a half-baked idea. It is not equitable across the population. And it would be extremely difficult to administer. 'What types of equipment would be taxable?' and 'How would you go about identifying equipment used in private networks?' are just a few of the complex questions raised by a measure such as this."

The state of New York enacted a property tax on communications equipment three years ago, but administrative problems and indus-

try fallout encouraged the state legislature to repeal the law this year — after 37 lawsuits were filed against the tax and several large corporations moved out of the state to avoid it, according to Levine.

"It was a misconceived idea to begin with, and I hope Congress can learn from this example," Levine said.

Enactment of the equipment excise tax is going to be an uphill battle, given the extent of the opposition, according to congressional sources.

In addition to this new communications equipment tax, the Joint Committee on Taxation is pushing for a three-year renewal of the existing Telephone Excise Tax. The current 3% Telephone Excise Tax is due to expire Dec. 31, 1987.

This tax is levied on all long-distance and local telephone services. It appears on all customer telephone bills as the "federal tax." Private-line services are exempted under this tax as a means of discouraging carrier bypass. If the existing excise tax is extended for three years at the current 3% rate, which inside sources say is likely to happen, an additional \$1.3 billion will be raised in 1988, and \$6 billion will be generated over three years.

A Joint Committee report argues that the service tax, which has been in effect since 1914, is relatively low and doesn't place a heavy burden on individual telephone customers or corporations. The report admits, though, that there "is no rationale, other than federal revenue needs, for the excise tax."

The Reagan administration and the U.S. Department of the Treasury oppose both the extension of the 3% Telephone Excise Tax and the creation of a new communications equipment tax on the grounds that they unfairly tax one segment of the economy and create wide-scale disincentives in the telecommunications industry. □

NCF membership increases by 27

continued from page 7

ing the processing power of multiple vendors' computer systems linked on the same network. An application taking advantage of this capability would process its subroutines on network processors best designed to handle a given function.

The group, an affiliate associate of the Corporation for Open Systems, has held one meeting since its kickoff last spring.

Among the major end-user companies and research organizations that joined NCF are Ford Motor Co., Martin Marietta Corp.'s Energy Systems Division, Lawrence Livermore National Laboratory, McDonnell Douglas Corp., Osservatorio Astronomico di Trieste, Planning Research Corp. and Stanford University Networking and Communication Systems.

Large computer and systems vendors now involved in the group include Amdahl Corp., Control Data Corp., Electronic Data Systems Corp., Gould, Inc., Prime Computer, Inc., Pyramid Technology Corp., Silicon Graphics Computer Systems, Inc. and Wang Laboratories, Inc.

Other new members include Avid Technology, Inc., Calspan Corp., Communication Machinery Corp., GE Calma Co., HCR Corp., Informix Software, Inc., Interbase Software Corp., Lachman Associates, Inc., Multiflow Computer, Inc., RealTime Engineering Co., Silver-Lisco and Technology Concepts, Inc.

NCF working groups are currently exploring such aspects of network computing as application partitioning, user requirements, core network services, network administration, software licensing and mainframe and wide-area network computing.

The next NCF meeting, hosted by Sun Microsystems, Inc., will be Nov. 18 to 20 in San Jose, Calif. □

IBM sets new PBX course

continued from page 1

Rolm, is further evidence of Rolm's assimilation by parent company IBM. IBM and Rolm marketing and sales organizations were combined under the IBM Information Systems Group (ISG) in April. IBM is now merging that group with its service and maintenance organization to offer customers one point of contact for sales and support of Rolm and IBM products, according to Jack Blumenstein, assistant group executive for IBM's ISG.

The 9750 Business Communications System is built around the IBM 9751 CBX, a switch with an enhanced systems bus that allows the switch to process 70% more calls than its largest predecessor, the Rolm Corp. CBX 9000AE.

The 9751 CBX is available in four models. A single 9751 CBX node can consist of one to five cabinets, and up to 15 nodes can be configured to create a single 20,000-line system.

IBM said it will begin shipping three models of the new switch, Models 20, 40 and 50, on Nov. 1. The Model 70 will be available in March 1988. IBM would not give pricing information.

The 9751 CBX is based on the Rolm 9000 AE processor, which Rolm introduced as the heart of its largest CBX earlier this year. Most other major switch components are new, however, including an enhanced version of the Rolmbus 295, operating system software and the Rolmlink line interface cards.

According to Ian Angus, president of Angus Tele-Management Group, Inc., a communications research and consulting firm in Toronto, the IBM switch uses the traditional Rolm PBX architecture, but "every single part of the box is different from that of the CBX."

Robert Lundy, Rolm product manager for the 9751, said the new switch is not compatible with the CBX 8000 and the CBX 9000.

With the new switch, IBM has forsaken Rolm's proprietary 12-bit digital voice sampling technique for the industry standard 8-bit sampling method. Implementation of this sampling method, which is achieved through use of the enhanced version of Rolmbus 295, will make it

easier for the 9751 to operate in ISDN environments.

The old sampling scheme created a 96K bit/sec digital voice channel, whereas the new method creates a 64K bit/sec channel, one of the fundamental building blocks of digital transmission services and future ISDN environments.

Switch supports RolmLink

On the station side, Blumenstein said the switch supports RolmLink and all existing Rolm station equipment. RolmLink is a proprietary, 256K bit/sec digital protocol used to support the RolmPhone line of digital telephone sets, the Cypress Communications Terminal and the Juniper II, which integrates Rolm station sets with IBM Personal Computers. IBM said standard 2500 analog telephone sets are also supported and that the switch can use existing CBX wiring.

Customers can expand a single-node 9751 CBX from 100 lines to 2,000 lines by adding interface cards and cabinets. The system is nonblocking for 928 simultaneous calls per node.

Each of the four 9751 CBX models use the newly announced RLI line interface cards, which support 16 voice and 16 data lines.

The Model 20, a one- or two-cabinet switch, supports 100 to 720 voice and data lines. The Model 40 is a single-node system that can handle as many as 2,000 voice and data lines. The Model 50 has all the same features as the Model 40 but is also fully redundant. The Model 70 is a fully redundant, multinode system, capable of supporting a maximum of 20,000 lines, of which 13,920 would be nonblocked.

The 9751 CBX supports asynchronous data switching at speeds up to 19.2K bit/sec, and synchronous data switching at speeds up to 64K bit/sec.

The switch also has an enhanced communications processor, an on-board unit designed to off-load functions like data call set-up from the main processor. Also new is a stand-alone Asynchronous Rackmount Data Communications Module, which provides expanded data-handling capabilities to any station supported by the new 16-channel voice and data line interface.

IBM said customers that installed CBX IIs after Dec. 31, 1986 will be eligible for

an upgrade incentive, a 20% credit toward the purchase of an 9751 CBX installed before 1990.

New switch features announced with the 9751 also serve as enhancements for current CBXs. They include improved automatic call distributor (ACD) software and a new attendant station. IBM's NetView/PC Rolm Alert Monitor has been extended to cover the new switch as well as Rolm's low-end PBX, the Redwood. The ACD enhancement, the IBM Call Center Resource Manager, provides the ability to oversee system performance and control operating expenses.

IBM said a new release of NetView/PC Rolm Alert Monitor, Version 1.2, can be used to poll up to 20 CBXs to collect error and alarm data. The Alert Monitor displays alerts on NetView/PC for local systems management and on a centralized host-based NetView system for centralized network control.

IBM said future releases of the IBM 9750 and its international counterpart, the IBM 8750, will provide ISDN capabilities. ■

Users blast access fees

continued from page 2

ization could undermine our educational system. This is a genuine threat to our society."

Ivan Seidenberg, vice-president of external affairs at Nynex Corp., outlined implementation problems that may crop up if the proposal is approved. Seidenberg said Nynex was taking a pragmatic view of the question, rather than being concerned with it as a public policy issue, and he cited the identification of enhanced service providers and the conversion to switched access lines from private lines currently used by the providers as two impediments to implementing the rule change.

"We believe the FCC should reexamine its pending proposal to impose access charges on enhanced service providers at this time," Seidenberg said. "A decision to impose such charges should be deferred."

Testimony against the proposed rule was also delivered by representatives of educational institutions, libraries, computer users groups and information

services companies.

"The imposition of access charges would be particularly harmful to small-business, residential and educational users of information services because these users are particularly sensitive to price changes," said Floyd H. Trogdon, vice-president and general manager of network services for Telenet Communications Corp.

The Boston Computer Society (BCS) urged the FCC to reconsider removal of the access charge exemption, asking that it be continued until implementation of the FCC's Open Network Architecture (ONA) plan.

ONA requires the regional Bell operating companies to unbundle all basic services into so-called basic service elements and to make those elements available to enhanced service providers and end users. It is intended to ensure that competitors and users have access to all the capabilities the RBOCs enjoy.

"If the exemption from access fees for enhanced service providers were lifted today, the economic costs — both to users and to the U.S. information industry — would far exceed

the nominal benefits," said Richard K. tenEyck, telecommunications director of the BCS.

More opposing testimony came from Jacqueline Bastille, director of the Health Sciences Library at the Massachusetts General Hospital, who spoke on behalf of the 5,000 member institutions of the Medical Library Association and the 40,000 members of the American Library Association. Bastille said enhanced services were particularly critical to libraries in the areas of on-line searching of remote bibliographic data bases, cataloging of library materials and interlibrary sharing programs.

"The restrictive regulatory environment in which health care institutions must now operate will not allow me to absorb the increase that eliminating the exemption would bring," Bastille said. "Nor can I pass the cost on to the customer, in this case a hospital patient. My other option, to reduce services, is also unacceptable."

Patrick said the commission has received more than 5,000 letters concerning the proposed access charge. The comment period runs until Oct. 26. ■

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I certify that the statements made by me above are correct and complete.

Alice Coronella
Traffic Manager

Access fees to hike rates

continued from page 1

local access is one component of the total cost of long-distance service, changes in access charges affect the final price of long-distance service.

AT&T is expected to file new long-distance tariffs next month that will reflect changes in local access rates. Other long-distance carriers, including MCI Communications Corp. and US Sprint Communications Co., are expected to follow suit.

Switched access

According to preliminary FCC estimates, rates for local switched access will decline an average of 2%, or \$350 million, said Daniel Grosh, special assistant to the chief of the Tariff Division of the FCC Common Carrier Bureau.

Switched access comprises both traffic-sensitive and non-traffic-sensitive charges. The non-traffic-sensitive charge, known as the carrier common line charge (CCLC), will decline by 4% under the new nationwide rates set by the National Exchange Carriers Association, an association that represents all local carriers.

The CCLC is the price local carriers charge long-distance carriers for the use of wires connecting the customer premises to the public switched network.

The CCLC is dropping because local carriers are recovering the cost of this service directly from end users in the form of the subscriber line charge. As the subscriber line charge increases, as has recently been the case, the CCLC declines.

The other component of switched access, recurring or traffic-sensitive charges, is going up

an average of 2%, Grosh said, but individual RBHC rates differ widely among operating company regions. These charges represent the cost incurred each time a local carrier establishes a circuit between the caller and the long-distance carrier.

Special access rate hike

The most significant change in access rates will be the proposed hike in special access, which has been steadily rising over the past several years. Proposed increases in special access rates vary widely between regions, Grosh said, although the nationwide average seems to be from 7% to 10%.

The RBHCs attribute special access increases to numerous changes in the accounting rules the FCC requires the RBHCs to follow.

"The new accounting rules were designed to be revenue-neutral," Grosh said, "although I'm sure the effect of these accounting changes on individual companies could bring about some of these rate increases. We really need to study the tariffs closely to determine whether the accounting rules caused these increases."

Whatever the reason, private-line users are not going to be pleased with these steep increases. "We were expecting a slight decrease in both switched and special access, but preliminary estimates indicate users will see a 10% to 20% overall increase in long-distance rates," said Brian Moir, attorney for the International Communications Association.

"This is horrendous. While it's still too early to gauge the full effect of these rate increases, it seems likely that private-line users are going to be hardest hit," he said.

Industry analyst Robert Ellis, president of The Aries Group, Inc.,

a consulting firm in Rockville, Md., said most large corporations budget for a 10% annual increase in telephone rates, and these proposed access charge revisions are not going to have a serious effect on their networks.

Ellis predicted that the decrease in switched access will cause rates for AT&T's Pro America and Direct Distance Dialing services to drop 1% to 2%. WATS rates will go up about 10%, and the cost of T-1 service will rise 3% to 8% due to increases in special access, he said.

Installation charges associated with local access are also increasing substantially, in some cases by as much as 100% to 300%.

According to Bell Atlantic Corp.'s tariff, for example, the current charge for the installation of a voice-grade special access channel termination is about \$65. Under the 1988 access tariff, the fee will increase to \$325 per channel.

The reason for such a massive hike is a recent FCC decision to allow the RBHCs to recover the cost of labor-intensive installation service in full, said David Hostetter, director of federal regulatory affairs for Southwestern Bell Corp. In past years, these costs were subsidized by other revenue sources.

Bell Atlantic and Southwestern Bell took a different tack from their Bell siblings in filing consolidated access rates that will apply throughout their operating regions. The reason for consolidating rates into one uniform price schedule is simplification. "It makes it easier for us to forecast price and demand changes accurately when we can average them on a region-wide basis," said Bell Atlantic attorney Manning Lee. "It also makes it easier for customers with offices in several states to track their costs by having a single price schedule to work from." □

CALENDAR

Oct. 14-15, Newport, R.I. — The Newport Conference on Fiber-Optic Markets. Contact: Newport Conference on Fiber-Optic Markets, KMI Corp., America's Cup Ave. at 31 Bridge St., Newport, R.I. 02840.

Oct. 14-16, Washington, D.C. — The Great International Celebration of Satellites in Space. Contact: Society of Satellite Professionals, P.O. Box 7154, McLean, Va. 22106.

Oct. 18-21, Phoenix — Systems Integration: The Business Challenge. Contact: Marcia Farrington, International Data Corp., 5 Speen St., Framingham, Mass. 01701.

Oct. 19-21, New York — SNA: Architecture, Products and Current Implementations. Also, Nov. 16-18, San Francisco. Contact: Information Breakthroughs, Inc., 445 W. Main St., Wyckoff, N.J. 07481.

Oct. 20-23, Montreal — MAP/TOP: A Comprehensive Technical Introduction and Status Report. Also, Nov. 3-6, Boston; Dec. 1-4, Los Angeles; Dec. 8-11, Ottawa. Contact: John Valenti, Integrated Computer Systems, 5800 Hanum Ave., Culver City, Calif. 90231.

Oct. 26, Dallas — WATS Alert: What You Must Know About the Latest Long-Distance Service Options. Also, Oct. 29, Chicago; Nov. 4, New York. Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Oct. 26-28, New York — The VAX Business User Forum. Contact: Dorothy Ferriter, IDG Conference Management Group, P.O. Box 9171, Framingham, Mass. 01701.

Oct. 27-28, New York — Unix Expo. Contact: National Expositions Company, Inc., Suite 12A, 49 W. 38th St., New York, N.Y. 10018.

Oct. 28-30, Portland, Ore. — Oregon Chapter of the Tele-Communications Association's Fourth Annual Conference and Tradeshow. Contact: Susan Vandenberg, 3121 S.W. Moody Ave., Portland, Ore. 97201.

Nov. 2-6, Las Vegas — COMDEX Fall '87. Contact: The Interface Group, Inc., 300 First Ave., Needham, Mass. 02194.

Nov. 9-10, Bethesda, Md. — The Post-Divestiture Tariffs and Their Impact on Large Networks. Contact: Michele Zbiegniewicz, The Aries Group, Inc., Suite 320, 1500 Research Blvd., Rockville, Md. 20850.

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► **PRODUCT COMPARISON**

A switch in time saves data

BY JOHN J. HUNTER

Contributing Editor

Data PBXs are back! It's not that these nifty systems that allow many terminals to contend for a few computer ports ever really left. But with all the hoopla surrounding digital private branch exchanges over the past few years, the data PBX was relegated to the role of a poor relative.

However, while digital PBXs were grabbing the headlines, their data cousins were racking up some \$112 million in sales worldwide last year, according to International Data Corp. (IDC) of Framingham, Mass.

Among the more successful products have been the Equinox Systems, Inc. DS-5 and DS-15 and Micom Systems, Inc.'s Instanet 6000 Models 20 and 40. All are veteran units that have been recently enhanced to furnish greater line-handling and more extensive networking capabilities.

All the units also have returned big bucks to their creators. The Micom data PBXs racked up some \$44.8 million in sales last year, while the DS models sent \$11.2 million to Equinox, according to IDC. The two product lines are quite similar in their data-handling and related services, such as port segmentation by class of service and port queuing, but they differ in their networking capabilities.

The DS-5 and DS-15 and both Instanet models are designed for low-speed data applications and support asynchronous and synchronous data inputs at speeds up to 19.2K bit/sec.

All allow terminals to contend for available computer ports and permit the ports to be segmented into caller and destination groups. The Micom products support up to 255 caller and destination groups each, while the Equinox units allow up to 45 caller and 75 destination groups.

The Micom and Equinox products all allow tandem connection to like units and have T-1 interface drivers that produce DS1-compatible message framing. Thus, the PBXs can exchange data over AT&T Accunet T1.5 facilities. In addition, the Equinox DS composite is compatible with AT&T's Digital Access and Cross-connect System (DACS), which permits individual DS0 channels to be switched.

While lacking DS0 capability, the Micom Instanet models are no slouches when it comes to networking. Through optional interconnect software, local and remote Instanets can be configured in linear chain, ring, star and fully interconnected star topologies. With an optional packet assem-

bler/disassembler, connection can be made to public X.25 packet networks and with an optional SNA Gateway, data can be sent to IBM hosts with IBM 3270 emulation handled by the data PBX.

The DS and Instanet models are stand-alone units consisting of a chassis, slots for multiport asynchronous and synchronous data channels, control logic and power supply. Micom and Equinox also offer local multiplexers to increase the number of terminals handled further.

Handling data

The data-handling capabilities of the DS and Instanet PBXs are much the same. Each accommodates asynchronous and synchronous inputs at speeds up to 19.2K bit/sec. The Instanet 6000 Model 40 handles 508 simultaneous connections at 19.2K bit/sec, while the DS-15 allows 660.

In terms of total line-handling, the units are pretty even. The DS-15 supports 1,320 lines, using local

port versions with RS-232-C and RS-422 interfaces.

Both vendors offer a "long-distance" direct-connect data card that interfaces with the data PBXs over four-wire cables. The DS card services 24 lines, uses RS-232-C or RS-422 interfaces, and drives a 19.2K bit/sec signal 3,000 ft with RS-422, or 6,000 ft with an optional line driver. The Micom card is available in four- or eight-port versions with the same interfaces and drives data 3,000 ft. Adding an optional line driver ups the distance to 5,000 ft.

For users needing current-loop interfacing, a 24-line 20mA version is available with Equinox's DSs. The Micom units also have a 20mA board that is packaged in four- or eight-port versions. The Micom and Equinox PBXs support clocked asynchronous inputs in the form of an IBM 3705/3725 board; the DS units have 12 ports vs. four for Micom.

The channel boards supporting control signals are quite similar

Micom offers other local multiplexers for the Instanet 6000 Model 40. The top-line Instamux 470i handles eight channels and transmits data operating at 9.6K bit/sec up to 5,000 ft over four-wire cable. The Instatrunk 480i is like the LM-48 in that it produces a T-1, DS1-compliant output and sends data 6,000 ft without a repeater and 18,000 ft with one. It also has interfaces for fiber-optic modems, private microwave and T-1 cable. The Instatrunk 480i, however, can carry up to 128 channels, each running at 9.6K bit/sec.

The sum of the features

The two product lines are similar in their data handling as far as speeds and channels are concerned, but the Equinox DS models should take up less real estate since their boards handle more lines. The Micom Instanet offerings allow more extensive local and remote integrated networks to be configured, thanks to their optional networking software.

However, the DACS compatibility of the DS models affords their users greater overall networking since they can take advantage of the entire AT&T DACS facility to link remote data PBXs.

Whether Micom's gateways will blunt that advantage depends on individual application needs. Micom and Equinox users interviewed have been long-time customers of each and use T-1 and networking facilities extensively. Charles Bairos, principal engineer with Polaroid Corp. in Cambridge, Mass., employs private and public T-1 facilities to link his DS-15s in Cambridge and Waltham, Mass. He has noticed quite an increase in performance. "We do a lot of file transfers to our [DEC] VAXes, and the T-1 really increased our throughput," he says.

In the past, Polaroid's PBXs were linked by statistical multiplexers. The combination of low data rates and delay due to the statistical multiplexers' error correcting was slowing things considerably. Bairos says he likes everything about the DS-15 except its inability to do adaptive routing. Users must define the path between switches, and he'd prefer to have the PBX do it automatically.

Adaptive routing is not a problem for James Weidel, network manager for the University of Southern California in Los Angeles (USC-LA). Weidel uses Micom's interconnect software to link several locations and says it works like a charm.

"It's really easy to use; we just enter the location name and it does everything including selecting alternate routes," he states. He doesn't see the lack of DS0 capabilities as a problem, since all USC-LA communications facilities are private and will stay that way for the foreseeable future. ▀

Two data PBXs compared

	Vendor/Product	
	Micom Systems, Inc. Simi Valley, Calif./ Instanet 6000 Models 20 and 40	Equinox Systems, Inc. Miami/ DS-5 and DS-15
Maximum channels handled	1,904	1,320
T-1 interface	✓	✓
Average price per channel	\$100	\$100

SOURCE: TMS CORP., DEVON, PA.

multiplexers and a 21-card slot-expansion chassis. A nonextended DS-15 can accommodate 720 directly connected lines. The DS-5 supports 240 direct-connect lines, 960 when local multiplexers are used.

The Instanet 6000 Model 20 is primarily intended to handle the flow of data among Micom's 32-channel Data Distributor Multiplexers. The Model 20 can handle up to 250 multiplexed channels. It can also interface with the Model 40 in order to exchange data. The Model 40 handles 504 directly connected lines with its basic chassis and 1,016 channels with its expansion unit. Adding Micom's new 32-channel Multiplexor Interface Panel kicks the number of channels handled by the Model 40 up to 1,904.

Options are in the cards

The asynchronous data cards offered for the DS and Instanet models are available with and without control-signal handling. The direct-connect (no controls) cards used by both sets of products have an RS-232-C interface and require three wires per terminal. The Equinox data card is available in 24- or 48-port versions and can transmit data up to 350 ft.

Micom has a similar data card, but it is offered in four- or eight-

port versions with RS-232-C and RS-422 interfaces. The boards can be used for dial-in or dial-out modem applications, support up to five control signals and have an RS-232-C interface. The Equinox board is available with 12- or 24-line capabilities, while the Micom offering supports four lines.

The synchronous data cards available for both product lines handle data rates up to 19.2K bit/sec using RS-232-C interfaces. Both also recognize modem-control signals. The Equinox models have eight ports and can be used in point-to-point and multidrop configurations. The four-channel Micom board does not support multidrop.

Multiplexer support

The Equinox local multiplexers provide 8-, 24- or 48-channel ports for connecting terminals to the DS models over four-wire cable at speeds up to 19.2K bit/sec. The 48-port unit, called the LM-48, has a 1.544M bit/sec DS1-compliant T-1 driver and can be interfaced with fiber-optic modems, private microwave and T-1 cable. The LM-48 will drive data up to 6,000 ft without a repeater and up to 18,000 ft with one. A two-line X48 Multiplexor Board connects two LM-48s into a single-board slot on the DS-5 or DS-15.

Hunter is president of TMS Corp., a telecommunications consulting firm in Devon, Pa.

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